STEEL

Production • Processing • Distribution • Use
For forty-eight years—IRON TRADE REVIEW

Published by
PENTON PUBLISHING CO.
PENTON BUILDING,
CLEVELAND, O.

John A. Penton, Chairman of Board
C. J. Stark . . . . . President
J. D. Pease . . . . . Vice President
F. V. Cole . . . . . Secretary

EDITORIAL STAFF
E. L. SHANER
EDITOR
E. C. BARRINGER
MANAGING EDITOR

ASSOCIATE EDITORS
A. J. HAIN — E. F. ROSS
G. H. MANLOVE — J. D. KNOX
A. H. ALLEN

New York
E. C. KREUTZBERG — B. K. PRICE
L. E. BROWNE

Pittsburgh
E. A. FRANCE JR.

Chicago
W. G. GUDE

Washington
L. M. LAMM

London
VINCENT DELPORT

BUSINESS STAFF
GEORGE O. HAYS
BUSINESS MANAGER

New York
J. F. AHRENS — E. W. KREUTZBERG

Pittsburgh
S. H. JASPER

Chicago
L. C. PELOTT

Cleveland
JOHN HENRY — R. C. JAENKE

R. T. MASON
CIRCULATION MANAGER

Contents . . June 4, 1934

Volume 94 ◆ Number 23

THE WEEK IN PERSPECTIVE 9

NEWS OF THE WEEK:

Radicals Rule Amalgamated; Washington Seeks Peace 10
Communists Bore Into Amalgamated 11

Wagner Bill	11	NRA	13
Weirton Case	11	Meetings	13
Transportation	12	Exports	14
PWA	12	Production	14
Uses of Steel	13	Financial	14

More Price Safeguards for Users in Revised Steel Code 12
Collaborators on Medal-Winning Institute Papers 13
Mirrors of Motordom 15
May Pig Iron Output Highest in 37 Months 16
Windows of Washington 17
Industrial Men in the Day's News 19
Obituaries 20
Here and There in Industry 21
Australia—Where Steel and the Bush Meet 21
New Prices Filed with Institute 72

EDITORIAL—The Only Way Out of the Labor Mess.... 22

THE BUSINESS TREND 23

ENGINEERING DEVELOPMENTS:

From Poles to Piling	25	Welding Tire Rims	38
Grinding Spring Rods	27	Steelmaking Progress	40
Decalcomania Finishes	28	Super-refractory	43
Steel House Design	30	Malleablizing Furnace	44
Methods and Materials	32	Lift Trucks	46
Swimming Pool	35	Machine Builders Meet	47
Steel Service Station	34	New Equipment	50
Building New Grinder	37		

MARKET REPORTS AND PRICES 55-74

CONSTRUCTION AND ENTERPRISE 73

WHERE TO BUY 75

ADVERTISING INDEX 90

NRA MEMBER U.S. WE DO OUR PART

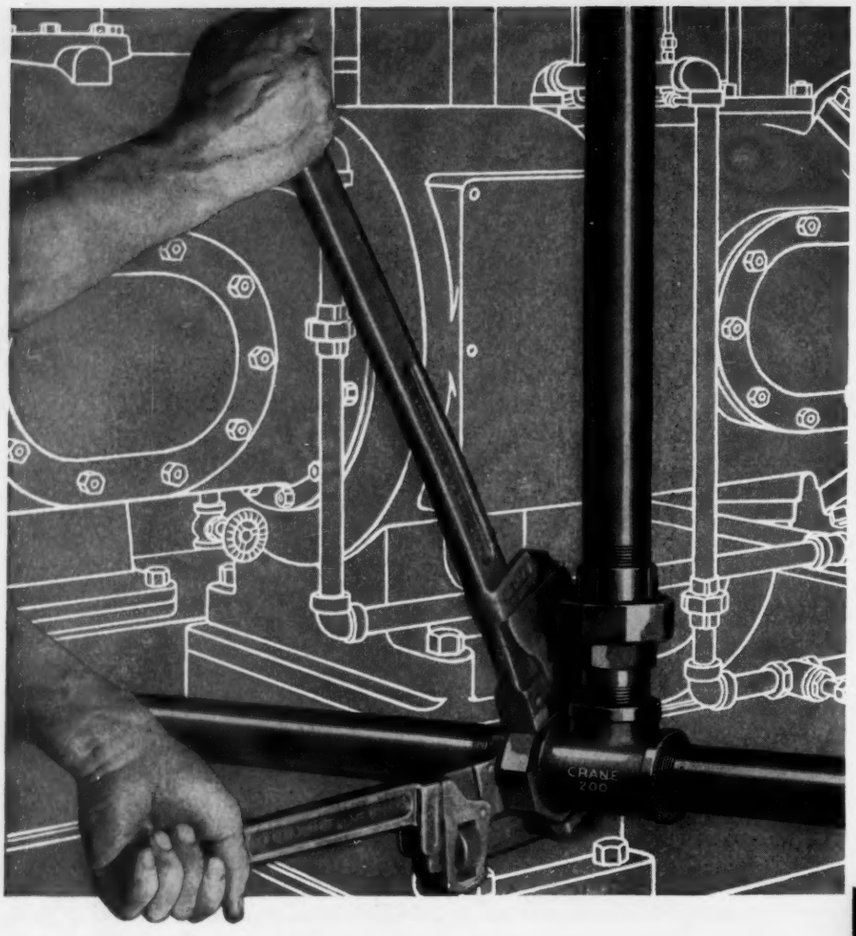
Branch Offices:
New York - - - - - 220 Broadway
Chicago - - - - Peoples Gas building
Pittsburgh - - - - - Oliver building
San Francisco - - - 441 Merritt ave., Oakland, Calif. Tel. Holiday 4290
Washington - - National Press building
Cincinnati - - - - Schmidt building
London - - - - - - - Caxton House Westminster, S. W. 1
Berlin - - - Berlin, C. 2., Bergstrasse 28

Member Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers Association.

Published every Monday. Subscription in the United States, Cuba and Mexico, one year $4, two years $6; in Canada one year $6.60, two years $11.20; in Great Britain and European countries, one year £2.

Entered as second class matter at post-office at Cleveland under the Act of March 3, 1879.

Copyright 1934 by Penton Publishing Co.



THEY CAN "take it"

Chamfered edges for quick pipe alignment

Constant gauging insures uniform size

A durable, tight iron-to-brass seat

Down comes the wrench . . . the entire strain of pulling the pipe line together falls on the union. Often the union must even compensate for slight misalignment.

In service, the union is subjected to the hammer of vibration and the stress of expansion and contraction.

Again, it must stand the abuse of frequent assembly and disassembly.

Yes, a union must be able to "take it" . . . *and Crane unions and union fittings can!*

Crane control of metals, scientific testing and generous proportioning make these unions and union fittings particularly valuable in pipe line use around condensers, purifiers, traps, regulators, gas piping for furnaces and lubricating oil lines.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO, ILL.
NEW YORK: 23 W. 44TH ST.
Branches and Sales Offices in One Hundred and Sixty Cities

Your visit to A Century of Progress Exposition should include a trip through the new Crane building.

VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

STEEL
Production . Processing . Distribution . Use

The Week in Perspective

IN A WEEK teeming with fresh developments in the labor situation, it is significant that every event—every phase of the current wave of discord—is directly traceable to confusion arising from a simple statement of 17 words in Section 7a of NIRA:

> *"That employes shall have the right to organize and bargain collectively through representatives of their own choosing. . . ."*

Inclusion of this seemingly innocuous phrase in the law of the land, without surrounding it with adequate explanation, and failure of administrators to interpret it consistently have precipitated the tangled mess which confronts the nation today.

Government, Playing One Side Against Other, Has Promoted Strife Instead of Harmony

Because the government, while professing to assist all employes to select representatives of their own choosing, actually shuts its eyes to coercion by professional labor organizers and chooses to discriminate against employe representation plans, industry has been forced to seek justice in the courts. In fact, the curtain raiser to the week's labor drama was the refusal by Federal Judge Nields (p. 11) to grant the government a preliminary injunction against the Weirton Steel Co. Concurrently the text of the new Wagner bill, now dubbed the "national industrial adjustment act," was released. Scanning it, industrial employers find it almost as bad as the original.

Insurgency and Dissension in Union Ranks Are Embarrassing to Veteran Leaders

National labor union representatives likewise are taking pot shots at the new Wagner bill. This is the outgrowth of a steady spread of insurgency in old "conservative" unions. It reached a climax in the Amalgamated association, when on Thursday an unauthorized spokesman (p. 10) publicly characterized President Roosevelt's pledge to assure elections for steel employes as "just so much bunk." Veteran Michael Tighe succeeded in quieting down his impulsive colleagues, but not before their ill-considered actions had excited a wave of public resentment. In addition to the handicap of internal dissension, the old line labor unions promoting the steel strike are hampered by the activities of outside radical groups, which are trying to chisel in on the party. Already there are signs that strike plans may be weakened by public opposition to the tactics of the radicals—the influence which broke the Foster-fomented strike of 1919.

Revisions in Steel Code Will Tend To Work to Advantage of Consumers

Steel's modified code of fair competition, effective June 11, probably will result (p. 12) in certain moderate advantages to consumers. The relatively unimportant changes in basing points, the withdrawal of the right of the code authority to pass upon the fairness of prices filed, the modified regulations for filing prices and other revisions all tend to the benefit of the buyer. The moot question is the extent to which the changes affecting the quotation and filing of prices will impair the protection against ruthless price cutting which was afforded by the original code. The tone of the President's comments, in authorizing the revised pact, indicates that he desires further changes. Such modifications as are dictated by experience should be welcomed but the danger of tinkering to please theoretical critics should not be minimized.

Handling Devices, Reducing Operating Time, Are Industry's Answer to Higher Costs

Who would have thought that fluted steel lighting standards or poles would serve admirably as shells for cast-in-place concrete piles? An Ohio manufacturer of these poles (p. 25) welds a steel ring to the butt end and a pointed nose to the small end, thus transforming the product to a piling shell. The fluting furnishes a greater bearing surface and increases the strength of the shell. This simple adaptation of an established product to a new use is opening up a new market. . . . Handling stock to and from machines is a big factor in determining the speed of production. In grinding spring rods for independent front wheel suspension units of the new motor cars, one company (p. 27) employs conveyors and novel unloading devices.

Radicals Rule Amalgamated as Washington Asks Steel Peace

UNDERTAKING to avert the steel strike which the Amalgamated Association of Iron, Steel and Tin Workers has tentatively called for June 16, official Washington last week stepped into a crossfire which was more devastating from the trenches of labor than of producers.

Amalgamated officials whom Michael Tighe, veteran president of the association, frankly characterized as "red" disdainfully labeled President Roosevelt's proposal to hold employe elections as "bunk," assailed the federal court's decision upholding the position of the Weirton Steel Co. in its controversy with the national labor board, and generally became intransigent.

Steelmakers Are Firm

Meanwhile, iron and steel officials were standing pat on the position taken at the American Iron and Steel institute meeting in New York, May 24, that they would not treat with "professional unions" and would deal with their employes through the representation plans in effect in most plants.

Washington got into the strike picture immediately following the announcement by the President Wednesday that he had extended the NRA steel code. In making this announcement he divulged his intention of ordering elections to determine employe representation in accordance with section 7A of NIRA.

On Thursday a delegation from the Amalgamated conferred with NRA Administrator Johnson, this delegation consisting of Mr. Tighe and the Amalgamated "rank and file" committee comprising Earl J. Forbeck, Clarence Irwin and William J. Spang.

Contrary to the conservative counsel of Mr. Tighe, the committee issued an inflammatory statement attacking the President, the labor board, the Weirton decision, charging producers with laying in poison gas and arms, and declaring that only a meeting of the institute with Amalgamated officials in the White House would bridge the situation.

Aroused, General Johnson on Friday denied saying that the steel code would be reopened on account of the strike threat, and made it plain that the Amalgamated has not laid a proper groundwork for invoking the penal and injunctive provisions for violation of section 7A.

Confer in Washington Monday

On Monday, June 4, representative officials of the industry are to confer in Washington, probably with both the President and General Johnson. At the same time officials of the Amalgamated will be in Washington. "We are going to try and settle this matter if we can," declared General Johnson Friday.

The strategy of the Amalgamated in threatening a strike June 16 in event its demands for recognition, submitted May 21, are refused, parallels that displayed at Weirton last December.

A strike at Weirton was called on Dec. 15, the day an election for employe representatives was scheduled —and held. In the Pittsburgh district, nominations for employe representatives in many plants close on June 11 and elections are to be held June 15, the day prior to the threatened strike.

Although Washington noted a distinct cooling off of the belligerent attitude of the Amalgamated association over the week-end, it still was disturbed by the apparent split. Mr. Tighe, for many years president, has been over-ridden recently by younger and more radical leaders. W. J. Long, who engineered the Weirton situation, is regarded in Pittsburgh as the power behind the throne, with the "rank and file" committee in close co-operation.

Set $1 an Hour Minimum

Although the Amalgamated has officially only demanded recognition —and these demands in many cases were refused acceptance by plant superintendents—its "rank and file" committee statement at Washington last week laid down this program:

"The 30-hour week and the 6-hour day; a $1 an hour minimum wage for common labor and all other types of labor increased accordingly, so as to provide for a decent standard of living; improved working conditions; abolition of the practice of one man doing two to five men's jobs; and the establishment of democratic means, unlike the autocratic company union, to deal justly with employes' grievances. These demands represent the minimum required for a decent standard of living and for elevating the steel industry from its present frightfully inhuman living conditions."

Since the Amalgamated issued its ultimatum, officials of employe plans have been more active in countering strike moves. A notice by employe representatives of the National Tube Co. works at Pittsburgh and McKeesport, Pa., reads: "Inasmuch as a large majority of the employes of National works has accepted the employe representation plan as their medium for collective bargaining, we, the duly elected representatives, serve notice on our fellow employes that we have not sanctioned whatsoever any call for a holiday and urge all those in sympathy with our present plan to refrain from participating in any such holiday."

In the Pittsburgh district unionism appears to have gained its greatest foothold at Monessen, Pa., where the Pittsburgh Steel Co., Page Steel & Wire Co., and American Sheet & Tin Plate Co. have plants. Union activity also has been marked at Carnegie, Pa., where the Columbia Steel & Shafting Co. has a plant.

Other Districts Surveyed

Only a few crews of the Carnegie Steel Co. at Duquesne, Pa., are believed to be organized. Incidentally, the national labor board has postponed action on the application of a group of Duquesne workers for an election.

One estimate is that the Amalgamated has organized about 20 per cent of the employes of the Illinois Steel Co. plant at Gary, Ind. Generally, in the Chicago district the situation is quiet and producers are marking time.

Eastern mills still are confident no trouble will develop there.

Buffalo, decidedly an open-shop town, reports hostility to the Amalgamated. Bethlehem workers are reported to be 100 per cent in the employe representation plan at Lackawanna and all but a small minority at the Seneca sheet mills. A manifesto signed by a great majority of Republic employes states they will have nothing to do with the Amalgamated or any other outside body. The Amalgamated claims about 300 members at the Wickwire Spencer Steel Co. plant.

At the Torrance, Calif., plant of the Columbia Steel Co. 100 workers in Torrance lodge No. 7 of the Amalgamated association refused to adopt the union resolution calling for recognition of the union by June

15 and voted 65 to 35 to disband. The Amalgamated claimed it had 90 per cent of the labor at the Torrance plant. However, it is significant that only 100 votes were cast at a meeting representing less than 10 per cent of the 1600 employes at the plant.

Employe representative councils at the National and Laughlin works of the American Sheet & Tin Plate Co. at Monessen, Pa., and Martins Ferry, O., respectively, are urging employes to refrain from striking.

The D & B division of the Emsco Derrick & Equipment Co., Los Angeles, averaging 80 employes, on May 10 celebrated the conclusion of the third year without a lost-time accident.

Wagner Bill

AMERICAN IRON AND STEEL INSTITUTE Friday joined other leading employer associations in attacking the revised Wagner bill, introduced May 26, as practically as iniquitous as the original one and urging its defeat as a measure tending to impose the closed union shop and to promote industrial strife.

With congress scheduled to adjourn by the middle of June, passage of the bill at this session is believed possible only if the President fights for it. The threat of a steel strike has supplied backers of the bill with some ammunition for it.

Analyzing the revised bill the Iron and Steel institute says:

"Notwithstanding modification, the revised Wagner bill embodies most of the objectionable features of the original bill. Despite statements to the contrary by proponents of the bill, it retains the un-American principles that were the subject of vigorous protests by employes and employers alike before the senate labor committee.

"Although the revised bill purports to be a measure to promote industrial peace, the practical result of its passage would be exactly the opposite. Its enactment would set the stage for a conflict which not only will retard national recovery, but will injure employes and employers for all time.

"The provisions of the bill would tend to strangle employe representation plans now in effect, under which millions of industrial workers are enjoying the benefits of an effective and modern form of collective bargaining.

"The bill would tend to impose the closed shop through requiring employers to deal with labor organizations now representing a small minority (less than 10 per cent) of the industrial workers of the nation, thus giving these unions a recognition and membership through legislation which they have been unable to win by voluntary appeal.

"It is based upon the vicious theory that there must be conflict and strife between employers and employes. Its provisions would drive a wedge between them.

". . . Under one provision of the bill, if a union is not strong enough to dominate the plant it will be possible for the plant to be so subdivided as to give union recognition to a part of it, however small, thus giving a foothold to union labor where the employes might be predominantly in favor of the open shop.

"The bill forbids contributions by an employer toward the expense of operating the representation plan of his employes. It is apparent that such provision is a blow aimed against employe representation plans, many of which have been in operation for years.

"Such plans make for industrial harmony, which is for the good of the employers as well as their employes, and there is no sound reason for making it unlawful for the employers to help defray the expense of operating them.

"It is time the American people were told the truth about the motives back of the industrial troubles that organized labor is now threatening. The threatened disturbances cannot be explained away on the ground that they are merely manifestations of business recovery.

"Their real causes are to be found in the determination of national labor leaders to exploit Section 7A of the recovery act for their selfish ends at any cost in total disregard of the welfare of workers or of the whole nation."

James A. Emery, counsel for the National Association of Manufacturers, declares the new bill "still objectionable in principle and policy." The National Metal Trades association says "the revised bill still retains the boldest assault upon the right of the employer to operate his own business that has thus far been proposed."

Communists Bore Into Amalgamated Association

UNDER the heading, "A Warning Against Communism," Michael Tighe, president of the Amalgamated Association of Iron, Steel and Tin Workers, and the international executive board of the association, states in the May 31 issue of The Amalgamated Journal:

To Our Membership:

During the present campaign to organize the steel industry which our Amalgamated association has conducted for the past nine months, the communists in every locality where organizing efforts have been made have injected themselves into the movement in various ways and through themselves and their emissaries have endeavored to destroy the morale of the membership of our newly instituted lodges. They became so bold that during the sessions of the recent convention at Pittsburgh, they invaded the building and mingled, under assumed names and occupations, with the new representatives for no other purpose than to disrupt our organization and create dissension among those present.

"Instances are known where these communists have likewise invaded other meetings of our association, in some cases making speeches; but always with that cunning which is characteristic of those who bore from within. Nothing has been too mean or vile for them to undertake. Only one object have they in view—to tear down the high standards which this organization has built up through more than a half century, i.e., loyalty to our country and its institutions.

These communists have tried by every means known to their evil minds to mislead our new members to believe that the support of the communist is an absolute necessity in the present campaign for recognition.

The Amalgamated association, through the international executive board, emphatically repudiates their advances, and under no circumstances, or conditions, will it disgrace itself by consorting, or permitting its members to consort, with this disloyal mongrel group."

Weirton Case

A SIGNAL VICTORY was won by the Weirton Steel Co., Weirton, W. Va., subsidiary of the National Steel Corp., when Judge John P. Nields of the federal district court at Wilmington, Del., May 29 refused to grant a preliminary injunction to restrain the Weirton company from interfering with an election under auspices of the national labor board.

The issue was entirely on the granting of an injunction. The election at Weirton last Dec. 15 in which the employe representation plan was upheld by a large majority was challenged by the labor board and a new election ordered. The Weirton company refused to permit this election and court action by the labor board followed.

The irony of the decision is that the Norris-LaGuardia anti-injunction law, put on the statute books by labor to prevent courts from granting ex-parte injunctions without a hearing of witnesses in open court was the basis for Judge Nields' decision against the labor board.

The next step is for the department of justice, in case it decides to pursue the case, to bring in witnesses to prove its contention of company interference.

Said E. T. Weir, chairman of the National Steel Corp.: "The decision justifies our position on the facts in the controversy, and needless to say, I am pleased."

More Price Safeguards for Users in Revised Steel Code

PROVISIONS virtually guaranteeing prices for a full quarter, permitting competitors to meet any reduction in price without a 10-day waiting period and prohibiting the institute from questioning any reduction are noteworthy in the revision of the NRA steel code promulgated by President Roosevelt May 30.

The code, first effective Aug. 19, 1933, and extended on Nov. 17, 1933, to May 31, 1934, has been renewed to June 11, when current revisions take effect. No expiration date is now set, for one reason because NRA and the federal trade commission have been directed to make a study of the price situation.

Also, in extending the steel code the President stated his intention of ordering elections in iron and steel plants to select representatives of employes for collective bargaining, this being a gesture toward restoring peace which has been threatened by the Amalgamated Association of Iron, Steel and Tin Workers.

Following is a summary of the more important code changes, which, like the original code, are couched in complicated legal verbiage:

The national work day is now 8 hours, with the 40-hour week retained.

Piece workers are guaranteed the minimum rates of pay for hourly workers.

Marion county is added to the Canton, Massillon and Mansfield district in Ohio; Erie, Crawford and Warren counties in Pennsylvania are added to the Buffalo district; Licking county in Ohio is added to the south Ohio river district; Scott county in Iowa and Ozaukee county in Wisconsin are added to the Indiana-Illinois-St. Louis district; Polk county in Iowa is added to the Kansas City district.

Three new definitions of unfair practice are set up—orders cannot be sought by promising to file new prices subsequently, products not properly classified as scrap cannot be sold as scrap, and the use of coercion to induce a producer to withdraw or change his base price is forbidden.

The power of the code authority to examine any price that has been filed and to set aside any price on the basis of its being unfair or below cost is withdrawn. There is now no minimum price or "cost recovery" provision in the code.

Once any producer has filed a base price lower than that in effect and the 10-day waiting period has elapsed, competitors may meet this price without any elapsed period. Also, any producer can quote as his price the lowest base price filed by any competitor at a basing point where he himself does not file.

Code expense of small producers is materially reduced.

All-rail transportation charges, which are included in delivered prices quoted under the code, may be reduced when delivery is by other means (water or truck) at rates approved by the code authority as "equitable and necessary in order that competitive opportunity to producers and consumers shall be maintained."

Spring terms for shipment of wire products between Dec. 1 and April 1 are 4 per cent discount for cash by Jan. 10, 3½ per cent off by Feb. 10, 3 per cent off by March 10, 2½ per cent off by April 10, and 3 per cent off by May 10.

Contracts may be made calling for delivery beyond the end of the next calendar quarter if products are required for an identified structure, railroad cars and locomotives, or a definite project of federal, state, county, or municipal government.

Following are changes in basing points:

Lake Charles, La., and Corpus Christi, Tex., are added to Gulf ports, and San Diego, Los Angeles, Long Beach, Calif., Stockton and Sacramento, Calif., and Everett and Bellingham, Wash., to Pacific ports.

Chicago, Rockaway, N. J., Berwick, Pa., and Cuyahoga Falls, O., have been added to the basing points for bar iron.

Duluth has been made a basing point for merchant bars, and Moline, Ill., for rail steel bars.

New York, Philadelphia, Baltimore and Gulf ports and New Orleans, are basing points for ferromanganese and spiegeleisen; Palmerton, Pa., and Chicago, for spiegeleisen; and Mobile, Ala., for ferromanganese.

Duluth is a basing point for carbon billets.

The pig iron classification has been broadened to include all grades, and Steelton, Pa., Buffalo and Duluth have been added.

A new classification is fence and sign posts, for which Pittsburgh, Chicago, Cleveland, Duluth, Birmingham, Ala., Gulf ports and Pacific coast ports are basing points.

Birmingham, Ala., has been added to the basing points for hot strip.

Glassport, Pa., Mobile, Ala., Lake Charles, La., and Corpus Christi, Tex., have been added to the basing points for drawn wire.

Pittsburgh and Chicago are basing points for wire hoops, a new classification.

Youngstown, O., Worcester, Mass.; Anderson, Ind., Gulf ports, Galveston, Tex., Pacific coast ports and San Francisco have been added to the basing points for wire rods.

Says Man Betrays Machine

THE machine has not betrayed us: we have betrayed the machine," declared Dr. Glenn Frank, president of the University of Wisconsin, at a meeting of the country's leaders in industry, science, education and medicine, called by Alfred P. Sloan Jr., president of the General Motors Corp., in Chicago, May 25, at the reopening of the Century of Progress exposition.

"Science and technology have given us the means by which we may emancipate the race from poverty, drudgery and insecurity. If we now prove incapable of using these means to the full, the verdict of history upon us will be that we were a people strangled by our own success."

¶American Iron and Steel institute June 1 issued a supplement to its extras on seamless tubes and tubing. Extras are expected June 4 on lap-welded tubes and tubing. Expected quantity extras on plates, shapes and bars, strip and sheets have been delayed and probably will not become effective until the fourth quarter.

¶Commercial resolution No. 46, amended May 29 to expire Aug. 31, provides quantity differentials on merchant steel bars for delivery at Colorado, Montana, New Mexico, Utah and Wyoming, 25 cents per 100 pounds on quantities less than 2000 pounds but not less than 1000, and 50 cents per 100 pounds on less than 1000 pounds.

Transportation

NEW YORK, NEW HAVEN & HARTFORD'S three-articulated-car train for the Providence-Boston run will be built by the Goodyear-Zeppelin Corp., Akron, O., of duralumin, with cars suspended similar to automobile knee action wheels. The cars will be of extreme streamline design, with a combination of airship and steamship model, adapted for rails. A diesel power unit will be installed at each end. Height of the cars will be about 20 per cent less than that of standard passenger cars, with the center of gravity extremely low.

PWA

PWA ADMINISTRATOR ICKES has rescinded his previous orders which required preference for local materials on PWA nonfederal projects. His bulletin says that the rule as to local preference for materials worked hardship in many cases and frequently caused delay in the PWA construction program.

Mr. Ickes also has rescinded his previous order to the effect that gen-

eral contractors must submit with their bids the bids of subcontractors on which their bids are based. Thus the question, "What is a subcontractor?" no longer is of importance as far as PWA bids are concerned.

However, the question is not entirely dead because the code of fair competition of the construction industry has a section which provides that proposals of subcontractors must be in the hands of the general contractor at least 24 hours prior to the opening of bids on a general contract.

Uses of Steel

EDWARD G. BUDD MFG. CO., Philadelphia, has booked a contract for a dome of stainless steel for the Hayden planetarium being erected in New York by the American Museum of Natural History.

This dome will be 75 feet in diameter, 10 feet larger than that of the Fels planetarium in Philadelphia, for which Dr. Howard McClenahan, secretary of the Franklin institute, designed the first metal dome. The Hayden dome, like the Fels dome in Philadelphia, will be fabricated by the shotweld process, will be perforated to eliminate echoes, and will be suspended from the ceiling.

¶Steel will be liberally employed in what Sears, Roebuck & Co., Chicago, herald as the first windowless department store, to be built shortly in Chicago.

It is also claimed that this will be the first completely air-conditioned mercantile structure erected in the United States. The only windows will be columns of glass 58 feet high above each of the four entrances.

It will be recalled that five years ago the Simonds Saw & Steel Co., Fitchburg, Mass., planned to erect a windowless factory.

NRA

K. M. SIMPSON, division administrator of NRA and president of the International Chromium Process Co., New York, who presided over the steel code hearing last July 31 and has been a government representative on the steel code authority, resigned from NRA June 1. However, he remains on the steel code authority. As division administrator he is succeeded by Carl Adams.

¶Proposed modifications in the tentative draft of the Lake Superior iron ore industry's code will be considered in Cleveland June 5 by a committee of five representing the operators, headed by R. C. Allen, president, Lake Superior Iron Ore association. These are minor changes suggested by deputy administrator of the NRA when the code was submitted recently. The original code was submitted to the government by the industry last fall. Pending its approval, the operators worked under the general provisions of the steel code.

¶A study of the general price situation to determine the extent of price fixing under NRA codes and the consequent effect upon prices will be made by a special committee consisting of NRA Administrator Johnson, Attorney-General Cummings and Secretaries Wallace, Roper, and Perkins, financed by an appropriation of $16,000 by PWA.

¶Penalty to employers dismissing or demoting employes for reporting NRA code violations has been fixed at $500 or 6 months imprisonment, or both.

¶Other code developments last week: Time limit within which industries with codes supplementary to MAPI must choose permanent code authorities has been extended to 120 days, expiring July 25.

Meetings

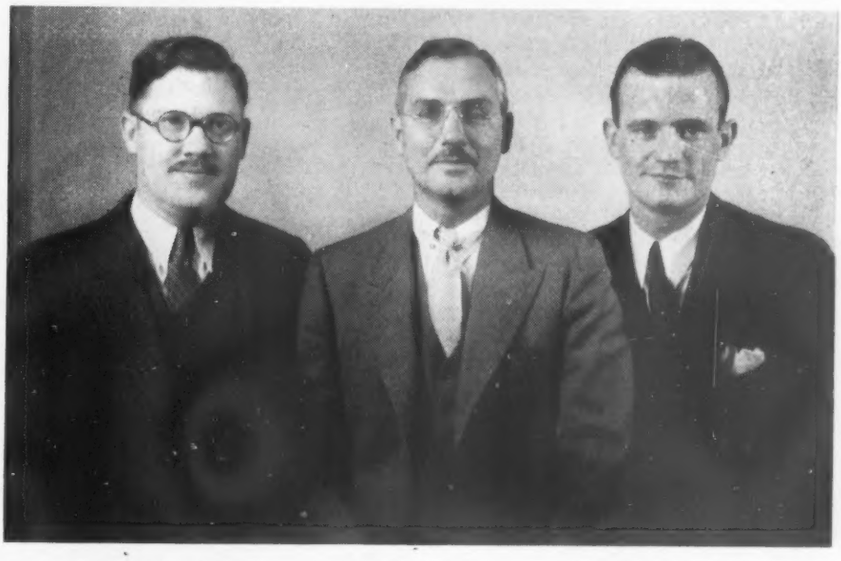
IRON and steel scrap dealers of the South will hold a two-day convention in Atlanta, Ga., June 6-7 at the Hotel Henry Grady.

All dealers covered by the scrap code as well as members of the institute are invited to attend the meeting.

Benjamin Schwartz, director-general of the institute and chairman of the national scrap iron code authority, will assist the South in organizing under the code.

¶Topics on iron ore and blast furnace practice will be discussed during the afternoon and evening of

Collaborators on Medal-Winning Paper



Reid L. Kenyon R. O. Griffis Robert S. Burns

ABOVE are pictured three of the staff of the American Rolling Mill Co., Middletown, O., whose paper "The Aging of Mild Steel Sheets" presented at the May, 1933, meeting of the American Iron and Steel institute won the institute medal for the best paper presented in that year.

R. O. Griffis, associate director of the Armco research laboratories, was born in Deshler, O., Oct. 9, 1891. After attending Miami university he joined the, company on March 23, 1914. In November, 1916, he was assistant metallurgist and in 1923 was transferred to the Ashland division. In 1929 he became chief metallurgist at Ashland, and in September, 1930, returned to Middletown as associate director of the research laboratories there.

Reid L. Kenyon, born in Indianapolis, Dec. 7, 1896, entered Purdue university with the class of 1918 but left before graduating to become chemist for the Hercules Powder Co. However, in 1919 he received his B. S. degree in chemical engineering from Purdue, and in 1927 his C. E. He has been associated with the Armco laboratories since 1920, and is now supervising research engineer.

Robert S. Burns, born in Columbus, O., March 2, 1908, received his B. A. from Ohio State university in 1930 and has been with the Armco laboratories since. He is now research engineer.

June 22, at the Battelle Memorial institute, Columbus, O., when the Ohio section of the American Institute of Mining Engineers meets in conjunction with the Blast Furnace and Raw Materials committee. Formal announcement of the meeting will be made later.

Foreign Trade

APRIL exports of iron and steel at 202,539 tons compare with 261,269 tons in March, and 100,395 tons in April, 1933. In four months of 1934 exports totaled 793,015 tons, compared with 301,567 tons in the same period of last year. Full details of exports and imports will be available next week.

Production

STEELWORKS operations snapped back 3 points last week to 60 per cent on the strength of gains in the Cleveland, Buffalo, Chicago, eastern Pennsylvania and Youngstown districts. Wheeling, Birmingham, New England and Detroit mills were steady, while Pittsburgh eased 1 point. Details for districts follow:

Pittsburgh—Declined 1 point last week to 50 per cent. A leading interest's local operations are slightly under this average, but all of the independents continue to better the average rate. There has been no change in the number of active steelworks blast furnaces from a week ago, and 26 out of 60 continue in blast. Of those active, 13 of 38 are on for United States Steel Corp. subsidiaries, and 13 out of 22 blast furnaces are being operated among Jones & Laughlin Steel Corp., Bethlehem Steel Co., Pittsburgh Crucible Steel Co., and Pittsburgh Steel Co.

Wheeling—Unchanged at 74 per cent last week, with 29 out of 39 open hearths active.

Detroit—Continued at 100 per cent last week for the fourth consecutive week. With both steel producers here scheduling steel production in all their open hearths, all 17 furnaces are operating, and all four blast furnaces are in blast.

Chicago—Up 3 points last week to 65 per cent. With shipments pushed by strike threats, a maintenance of active operations is in prospect for the near future. Fifteen steelworks and two merchant blast furnaces are active.

Buffalo—Advanced 3 points to 53 per cent last week, and this rate will continue this week unless there should be unexpected labor developments. Twenty out of 38 open hearths are in operation.

Birmingham—Held at 55 per cent last week. Thirteen to 14 open-hearth furnaces at Fairfield, Ensley and Gadsden continue active. Schedules indicate an early cessation of operations at several of the open hearths due to lagging business.

Cleveland-Lorain—Steelworks operations moved up 1 point to 79 per cent, with the National Tube Co., Lorain, operating all of its 12 open hearths continuously last week, Corrigan, McKinney Steel Co., 12, and Otis Steel Co., 7. These units also are scheduled for this week.

New England—Unchanged at 84 per cent last week, with indications pointing to a gain of several points this week due to one mill operating at capacity.

Central eastern seaboard—Up fractionally to 45½ per cent last week. Releases from consuming manufacturers with definite orders ahead are increasing, with the probability of a further slight expansion in steelmaking operations this week. The possibility of labor trouble is an increasing but not as yet an important factor in expanding specifications for most products.

Youngstown—Gained 2 points last week to 63 per cent and the rate is expected to rise to 66 per cent at the beginning of this week. Republic Steel Corp. lighted three open hearths at its Lansingville Works.

¶Colorado Fuel & Iron Co., Pueblo, Colo., has reopened its pipe foundry for five days a week, one shift, and has increased the working force at its iron ore mines at Sunrise, Wyo.

Convention Calendar

June 11-14 — American Electro-Platers' society. Annual meeting at Hotel Statler, Detroit. H. A. Gilbertson, 434 South Wabash avenue, Chicago, is secretary.

June 17-22—Society of Automotive Engineers. Annual summer meeting at Saranac Inn, Saranac Lake, N. Y. John A. C. Warner, 29 West Thirty-ninth street, New York, is secretary.

June 18-22—National Association of Purchasing Agents. Annual convention and exhibition, Hotel Cleveland. George A. Renard, 11 Park Place, New York, is secretary.

June 22—American Institute of Mining Engineers, Ohio section. Joint meeting with the Blast Furnace and Raw Materials committee at Battelle institute, Columbus, O. C. H. Lorig, 505 King street, Columbus, O., is secretary of the Ohio section.

June 25-28—American Society of Mechanical Engineers. Semiannual meeting at Cosmopolitan Hotel, Denver. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

June 25-29—American Society for Testing Materials. Thirty-seventh annual meeting at Chalfonte-Haddon hall, Atlantic City, N. J. C. L. Warwick, 260 Broad street, Philadelphia, is secretary.

June 25-29—American Institute of Electrical Engineers. Annual summer meeting at The Homestead, Hot Springs, Va., H. H. Henline, 33 West Thirty-ninth street, New York, is secretary.

Financial

FIFTY-SEVEN integrated steel companies with a total investment of $4,423,077,377 had a combined net loss of $64,798,707 in 1933, while 133 companies with an investment of only $484,668,907 reported combined net earnings of $5,104,475 for the year.

This survey of 190 producers, representing over 90 per cent of the industry's capital, leads the American Iron and Steel institute to conclude that the small non-integrated companies fared better last year, the first year of recovery, than their larger fully integrated competitors.

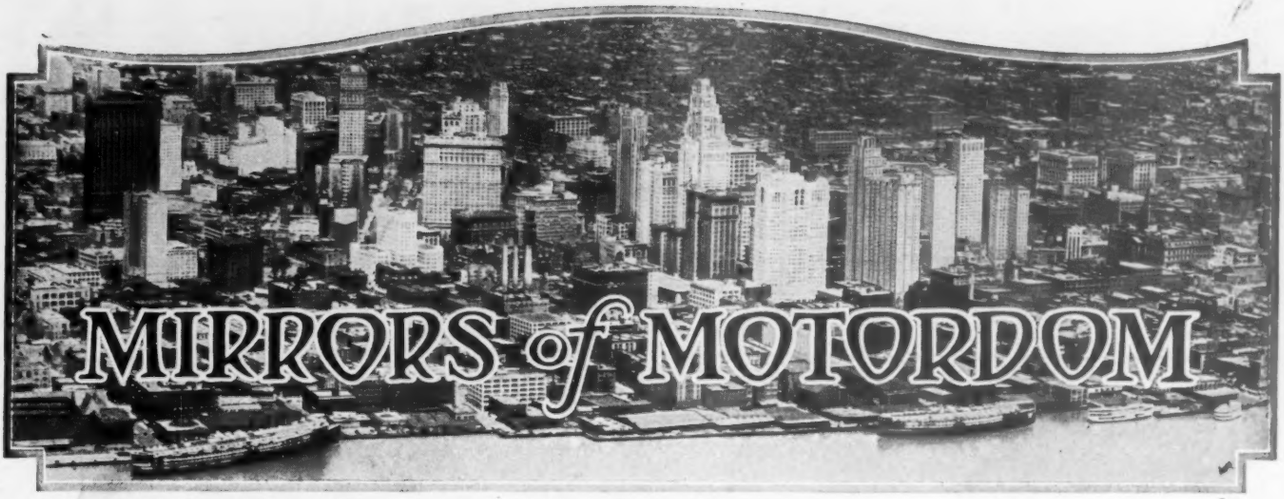
Detailed comparison of the position of these 190 companies is given in the subjoined table.

¶Charles M. Schwab, chairman of Bethlehem Steel Corp., has offered to underwrite any stock which remained unsubscribed in a drive to assure $100,000 in capital stock for the reopening of the First National Bank of Patton, Pa., which is near Johnstown, Pa. The bank had been closed since March, 1933. Mr. Schwab has aided a number of banks to reopen since the banking holiday.

¶Spang, Chalfant & Co. Inc. and subsidiaries, Pittsburgh, report a first-quarter net loss of $37,391, much reduced from the $292,152 loss of the same three months of 1933. The position as of March 31, at $13,996,007 to $886,315, is improved. Common stock of the company was stricken off the New York stock exchange May 28 because of the small supply available.

Small Steel Units Profited in 1933 as Large Ones Lost

For 1933	57 Companies Producing Steel Ingots	133 Other Companies	190 All Companies
Total income	$73,810,702	$23,564,811	$97,375,513
Net income	—$64,798,707	$5,104,475	—$59,694,232
Wages and salaries	$399,280,105	$56,320,811	$455,600,916
Dividends	$13,247,305	$7,132,919	$20,380,224
Investment	$4,423,077,377	$484,668,907	$4,907,746,284
Per cent earned on investment	—0.75%	1.83%	—0.50%
Number of stockholders	466,671	47,573	514,244
Number of wage earners	.....	.....	394,943



Plans for Plymouth Near

• • •

Reducing Floats of Parts

• • •

Ford 1933 Loss $3,923,524

DETROIT

ALMOST daily, "key" men of the Chrysler organization are conferring at the Highland Park plant, indicating that plans for the 1935 Plymouth are almost ready for the final O.K. by Walter P. Chrysler himself.

The new Plymouth, it is understood, will not be so radical as the air-flow DeSoto and Chrysler but will borrow much from them, including fender and beavertail back lines.

Dodge also will be semi-streamlined for 1935. The strategy of the Chrysler organization still is to make the transition to streamline models in easy stages for its bread and butter cars—Plymouth and Dodge.

General Motors also is making rapid progress on designs for 1935, and the proving ground track at Milford, Mich., is alive with new test cars. At this distance it appears that 1935 models of all makers will inherit marked characteristics from both General Motors and Chrysler.

The General Motors contribution probably will be the LaSalle-type front end—the knife-edge radiator shell which has appealed to many designers. The Chrysler beavertail back, possibly with the spare tire concealed within the body, which Hudson-Terraplane has pioneered, will indicate the Chrysler strain in many series.

THE Memorial day hazard past, automobile production is expected to snap back. The Wednesday holiday plus some shutdowns for the remainder of the week cost the industry about 20,000 units last week.

Despite the holiday, Chevrolet output last week approximated 17,500, or about 250 more than in the week ended May 26. Ford, who has a streamlined body ready for production, presumably on the present chassis, decreased heavily to just under 10,000 units, compared with approximately 23,000 in recent weeks. The holiday shutdown also reduced Plymouth output, from 12,000 a week to 9000 for the week ended last Saturday.

Other production statistics for the week ended June 2, with the variations from the preceding week, are: Auburn 160, off 80; Buick 2040, off 810; Cadillac-LaSalle 220, off 330; Chrysler 1400, off 550; DeSoto 500, off 700; Dodge 2900, up 50; Graham 150, down 190; Hupp 238, up 17; Nash 1300, off 325; Olds 3000, off 600; Pontiac 700, down 800; Reo 600, down 50; Studebaker 800, off 50; Hudson-Terraplane 1000, off 1500; Willys 500, closed the week before.

According to *Cram's Reports*, total output in the week ended June 2 was 54,185, compared with 76,281 the first week preceding and 75,550 the second week preceding.

Tentative June schedules are Chevrolet, 91,000; Ford, 80,000; Plymouth, 40,000; Buick, 11,000 and Olds, 12,000.

The slight improvement in production in the week ended May 26 and the sharp reduction in the week ended June 2 becloud the real trend, which is downward, but Detroit is more reconciled to easing off into the summer lull. The fact that current production in a week is now equivalent of a whole month's output 18 months ago is consoling.

Last week, steps were taken to reduce the float of parts, floats being the in-transit items of bodies, motors and other parts converging on assembly lines. The smaller the final assembly the smaller the float, hence parts makers are beginning to feel the effects of the anticipated summer lull before the assembly lines themselves.

AS PRODUCTION eases off a job in Detroit takes on something of a premium. As an idea of how prized a job has become, consider the husky waiting last week in an employment office in Pontiac who when approached by a labor organizer threw him bodily over a nearby fence.

Also typical is the fact that at an employes' mass meeting called by union organizers at a Detroit plant last week only 92 out of 3000 employes responded, and when one of the 92 arose and said, "I don't know how the rest feel but as far as I am concerned I am not back of anything that will lead to my job being lost," the meeting broke up.

LAST week the public got its annual momentary insight into Ford finances when the Ford Motor Co. made its compulsory annual report to the Massachusetts commissioner of corporations.

Since the balance sheet does not indicate any dividends that may have been paid to the three owners of the business—Mr. and Mrs. Henry Ford and Edsel B. Ford—the deduction may not be accurate, but it is the only possible gage of Ford finances.

This balance sheet shows a profit and loss surplus on Dec. 31, 1933, of $576,517,079, compared with $580,440,603 on Dec. 31, 1932, thereby indicating a 1933 loss of $3,923,524. This compares with a loss of approximately $74,861,644 in 1932 and is the nearest approach to a profit by Ford since 1930. In the past three years the Ford loss totals slightly over $132,000,000.

A comparison of Ford finances from the beginning, necessarily incomplete but the only one possible considering Ford's secrecy, follows:

Year	Profits
1909	$ 3,125,876
1910	4,127,208
1911	7,288,303

1912	13,552,239
1913	27,001,203
1914	24,923,449
1915*	23,426,662
1916	57,056,429
1917	26,715,944
1918	30,341,057
1919**	70,000,000
1920†	61,907,449
1921†	17,198,564
1922††	57,601,040
1923 (a)	119,298,862
1923*	82,263,483
1924	115,105,416
1925	115,078,383
1926	75,270,895
(Model T is dropped)	
1927 (deficit)	42,786,727
1928 (deficit)	72,221,498
1929	81,797,861
1930	44,460,823
1931 (deficit)	53,586,000
1932 (deficit)	74,861,644
1933 (deficit)	3,923,524

*10 months. **Year ended July 31.

†10 months ended April 30. ††10 months ended Feb. 28. (a) Year ended Feb. 28.

Buffalo Corp. Aligns with Lavino on Stainless Steel

The Buffalo Electric Furnace Corp., Buffalo, has completed an agreement with E. J. Lavino & Co., Philadelphia, for commercial production of stainless steel by a new method in the former's plant in River road. Experimental production of this steel and other alloys has been under way for about four years.

The process to be used develops around an electric furnace using hollow electrodes instead of solids, the fusing taking place inside the electrodes. Temperatures 1000 to 2000 degrees higher than those commonly employed are possible.

Under the agreement, the Buffalo concern obtains a large interest in the Electric Alloys Corp., a subsidiary of Lavino. Production on a commercial scale is expected to start about July 1. Negotiations are under way for licensing arrangements which will permit production by the new method in other countries.

MAY IRON PRODUCTION

	No. in blast last day of month		Total tonnage	
	May	Apr.	Merchant	Nonmerchant
Ohio	32	30	83,631	485,052
Penna.	35	33	80,117*	535,255*
Alabama	10	10	65,224	73,404
Illinois	8	8	42,499	119,474
New York	8	8	47,037	89,666
Colorado	1	1		
Indiana	8	8	4,956	301,433
Maryland	4	3		
Virginia	0	0		
Kentucky	1	1		
Mass.	0	0		
Tennessee	1	0		
Utah	1	1	9,950*	116,809
West Va.	3	3		
Michigan	3	3		
Minnesota	0	0		
Missouri	0	0		
Total	115	109	333,414*	1,721,093*

May Pig Iron Production Is Highest in 37 Months

INFLUENCED by the 12 blast furnaces which resumed activity in April and 6 more returning to service in May, coke pig iron production in the United States during the latter month made the largest increase in 10 months. The rate of production and the total of operating furnaces were both the highest in three years.

Reports from all blast furnaces in the country, with estimates of output for the last one or two days of the month, indicate that the average daily production in May was 66,274 gross tons, an increase of 8401 tons, or 14.5 per cent, over the 57,873-ton rate of April. This was the highest daily rate for any month since April, 1931, with 66,986 tons per day. In May, one year ago, production was 28,784 tons per day.

Total production in May was 2,054,507 tons, which, compared with the 1,736,217 tons of April, was a gain of 318,290 tons, or 18.3 per cent. This was the first time in 37 months that output has exceeded two million tons; the May figure was the best since October, 1930, with 2,165,374 tons.

For the first five months of 1934, production has aggregated 7,912,747 tons, an increase of 4,732,950 tons, or 149 per cent, over the 3,179,797 tons made in the corresponding period of 1933. The figure for the similar period of 1932 was 4,538,505 tons.

In the last five months, operating blast furnaces have increased 41—from 74 on Dec. 31 to 115 on May 31. On May 31, one year ago, only 61 furnaces were making iron. The May total was a gain of 6 stacks over the 109 active on the last day of April. During the month, 7 stacks were placed in operation and only 1 was blown out or banked. Of the nonmerchant or steelworks class, 5 were blown in and 1 was blown out; of the merchant class, 2 were blown in and none blown out.

Relating production to capacity, the operating rate for May was 48.0 per cent, compared with 42.0 per cent in April, and 38.0 per cent in March. For May, one year ago, the rate was only 20.9 per cent.

Blast furnaces resuming in May were: In Ohio Hamilton, Hamilton Coke & Iron Co.; Ohio No. 4, Carnegie Steel Co. In Pennsylvania: Edgar Thomson H, Carnegie Steel Co.; National No. 1, National Tube Co.; one Swedeland, Alan Wood Steel Co. In Maryland; Maryland E, Bethlehem Steel Co. In Tennessee: Rockdale, Tennessee Products Corp.

The only furnace removed from production was one Eliza, Jones & Laughlin Steel Corp., in Pennsylvania.

The Trussville, Ala., blast furnace of the Birmingham-Trussville Iron Co., Birmingham, Ala., was dismantled in May, thereby reducing the total of potential stacks in the United States from 285 to 284. This furnace, inactive since 1919, was built in 1887-89 and last rebuilt in 1917. It had annual capacity of 70,000 gross tons of foundry iron.

AVERAGE DAILY PRODUCTION

	1934	1933	1932	1931
Jan.	39,537	18,348	31,336	55,337
Feb.	45,385	19,752	33,122	61,114
Mar.	52,438	17,484	31,194	65,448
Apr.	57,873	20,786	28,524	66,986
May	66,274	28,784	25,282	64,355
June		42,165	20,867	54,599
July		58,108	18,394	47,170
Aug.		59,137	17,035	41,264
Sept.		50,264	19,788	38,947
Oct.		43,824	20,795	37,831
Nov.		36,124	20,858	36,727
Dec.		38,456	17,650	31,625
Av.	52,402	36,223	23,699	50,035

MONTHLY IRON PRODUCTION

	1934	1933	1932
Jan.	1,225,643	568,785	971,437
Feb.	1,270,792	553,067	960,550
Mar.	1,625,588	542,013	967,015
Apr.	1,736,217	623,606	855,734
May	2,054,507	892,326	783,769
Total-5 mo.	7,912,747	3,179,797	4,538,505
June		1,264,953	626,015
July		1,801,345	570,222
Aug.		1,833,265	528,105
Sept.		1,507,931	953,640
Oct.		1,358,540	644,648
Nov.		1,083,740	625,753
Dec.		1,192,136	547,179
Total		13,221,707	8,674,067

RATE OF OPERATIONS

(Relation of Production to Capacity)

	1934[1]	1933[1]	1932[2]	1931[3]
Jan.	28.7	13.3	22.1	38.4
Feb.	32.9	14.3	23.4	42.5
Mar.	38.0	12.7	22.0	45.4
Apr.	42.0	15.1	20.2	46.5
May	48.0	20.9	17.9	44.7
June		30.6	14.7	37.9
July		42.2	13.0	32.7
Aug.		42.8	12.0	28.7
Sept.		36.4	14.0	27.0
Oct.		31.8	14.7	26.3
Nov.		26.2	14.7	25.5
Dec.		27.9	12.5	22.0

[1]Based on capacity of 50,313,975 gross tons, Dec. 31, 1932; [2]on capacity of 51,598,175 tons; [3]on capacity of 52,515,875 tons. Capacities by American Iron and Steel institute.

WINDOWS OF WASHINGTON

WASHINGTON

"CODDLING of labor," says one of the best-known industrial leaders of the country, "rapidly is developing a situation which threatens to become a Frankenstein."

On the other hand, the administration is resentful of the refusal of steel and other industrial executives to deal with the representatives of organized labor.

As to organized labor, apparently nothing short of complete unionization of industry will satisfy it. Organized labor is playing aggressively with the best cards it ever has been dealt.

Says organized labor with reference to the threatened steel strike: "There is only one way to avert this strike—for the President to invite the directors of the American Iron and Steel institute to the White House for a conference with the Amalgamated association."

And the alternative is suggested to the imagination: "If the President refuses to call this conference with the American Iron and Steel institute, it means bloody war."

Plan To Appeal Weirton Case

While the government and organized labor received a setback when the federal judge at Wilmington, Del., refused a preliminary injunction to restrain the Weirton Steel Co. from interfering with a proposed election of employe representatives under the supervision of the national labor board, the decision does not mean much.

The court held that under the Norris anti-injunction law, it could not grant an injunction without a hearing of witnesses in open court. It is expected the case will be appealed to the United States Supreme Court.

In some quarters here it is believed that the steel industry will come up next for further clarification of Section 7a of NIRA.

In the order promulgating the revised steel code, President Roosevelt undertakes to provide "as the occasion may demand, for the election by employes in each industrial unit of representatives of their own choosing —under the supervision of an appropriate governmental agency and in accordance with suitable rules and regulations."

While the whole labor situation is in a state of flux, with much uncertainty as to the next immediate moves, it is clear in Washington that the present trend is very much in favor of organized labor. This is all the more true in view of the contrast between the militant tactics of the unions and the more or less passive attitude of employers.

More Changes Coming in Code

The revised steel code affords another illustration of the fact that under the New Deal nothing is decided for long. At the suggestion of NRA, that body and the federal trade commission are to make a joint study of the steel basing point system and report to the President within six months. The waiting period between time of filing prices and making them effective also will be very much involved in this study.

It may be said that federal trade commission is not in favor of any compromise with the basing point system. It favors mill prices, and is against the waiting period or any other device which would permit price stability. Hence, there may ensue important changes as a result of the joint study by NRA and FTC.

At the same time, it is regarded here as certain that there will be no return to the old-time cut-throat competition. Exemption of the so-called "service" industries from the fair trade practice features of their codes resulted entirely from the impossibility of securing enforcement in these industries, and not from any lessened appreciation for the value of price stability.

The exemption order provided for local fair trade practice pacts where 85 per cent of those affected agree. This is thought to be sufficiently large majority to assure fairly complete compliance.

On the business front, the most important development is that streamline trains are getting past the "fad" stage. Impressed with the speed and flexibility of the Burlington Zephyr, several roads are taking action which will result in the construction of similar trains. It is expected that important announcements of such projected new trains will be made in the next few weeks.

There exists some confusion in well-informed quarters as to the comparative desirability of competing materials. In some quarters it is thought that ordinary plain carbon steel will not be displaced by stainless steel and aluminum as carbuilding material. This opinion is based on the theory that comfortable riding demands heavy equipment.

Another important development is a decision by the United States board of tax appeals in the case of the American South African Line Inc. Whereas the internal revenue service, as a part of the general policy of cracking down on all taxpayers to the fullest extent possible, sought to assess this line on a basis of 3 per cent depreciation annually, the court decided on 4 per cent for five vessels and 3½ per cent on a sixth. The vessels involved are combination passenger and cargo ships.

U. S. Purchases in Status Quo

Another development of interest to all government contractors is the decision not to set up a government super-purchasing organization. The way for such a development appeared to have been opened by President Roosevelt's reorganization order of June 10, 1933. This order gave to the procurement division of the treasury department full and complete authority over all government purchases. Last November Rear Admiral

Christian J. Peoples was placed in charge of activities in the procurement division.

The decision is that government purchasing departments will continue to function much along the present lines, subject to desirable modifications. For instance, the department of agriculture has been instructed to draw upon army and navy warehouse stocks on the West Coast. The navy has been asked to purchase provisions for the District of Columbia. To some extent purchases of commodities will be combined in order to get the benefit of quantity differentials. But there will no sweeping changes effected.

Development of plans for the construction of army dams will be pushed as rapidly as possible. Their requirements will be large. On May 25, the United States army engineer at Portland, Oreg., opened bids on the general contract for the Bonneville dam, Columbia river. This dam will require 12,000,000 pounds of concrete reinforcing bars, 4,900,000 pounds of structural steel, 108,000 pounds of steel castings and 30,000 pounds of corrosion resisting steel. The dam initially is to serve in the interests of navigation; later it will be supplemented by a hydroelectric development. The requirements to come later will include 18 gates weighing about 250 tons each, and also trash-rack metal work, valves, etc.

Fort Peck dam on the Missouri river, construction of which has been undertaken by the army engineers, will require steel tunnel linings, gates, valves, trash-rack metal work, etc. Material covered by the contract for the four diversion tunnels includes 9,886,000 pounds of steel plates for shaft lining and foundation, 6,000,000 pounds of concrete reinforcing bars and 6,500,000 pounds of structural steel.

Dams for Upper Mississippi

Most of the construction work on the dams on the upper Mississippi river also remains to be done. Of 27 locks and dams, four have been completed. In the case of three more, the locks have been completed and the dams are being constructed under contract. On 13 more projects, the locks are under construction by contract but funds for the dams have not yet been made available to the army engineers. Seven locks and dams still remain on the list to be provided for.

These Mississippi river dams are all of the steel roller gate type. On the average, these dams each require approximately 7,000,000 pounds of structural steel, 1,400,000 pounds of concrete reinforcing bars, 260,000 pounds of steel forgings, 131,000 pounds of nickel steel forgings, 527,000 pounds of steel castings and 2,000,000 pounds of steel roller gates.

Two army projects now under way in the Ohio river are the new dams at Gallipolis and Montgomery island. The latter is entirely under contract construction. At Gallipolis the lock is under contract construction but the dam has not yet been placed under contract. This dam will require 10,000,000 pounds of structural steel and 1,500,000 pounds of concrete reinforcing bars together with the usual heavy accessories.

Winfield dam, the last of three on the Kanawha river, now is under construction. It will require about 5,000,000 pounds of structural steel and 750,000 pounds of concrete reinforcing bars. A reservoir on the Tygert river near Bradford, W. Va., will be a masonry structure and will require little steel. The army engineers have not yet completed plans for carrying out the flood control project on the Muskingum river in Ohio.

For the time being, the battle between stainless steel and aluminum in connection with the exterior sash and doors for the various permanent structures in connection with Boulder dam is in a stage of compromise. The bureau of reclamation has decided to take alternative bids covering the use of both metals.

Urge Stainless in Warplanes

Everybody interested in the manufacture of airplanes and airplane materials, equipment and parts will do well to obtain a copy of the report of the subcommittee on aeronautics to the house committee on naval affairs.

This document, just issued by the government printing office as Section No. 37 of the proceedings of the present session of congress, is the result of the subcommittee's investigation to determine whether there has been any profiteering in the sale of airplanes to the navy.

The majority report is very briefly to the effect that there has been no such profiteering.

But the minority report, signed by W. D. McFarlane of Texas, stretches out through 65 pages of fine type and covers practically every detail of the purchase of planes by the navy. The feature of this minority report of most interest to suppliers of materials for airplane construction condemns aluminum and advocates the use of stainless steel. This par of the report reads as follows:

"The practically universal use of aluminum alloys in the construction of warplanes of the United States air forces should be either terminated altogether or very drastically curtailed. This usage of aluminum would appear to benefit only the aluminum interests in this country.

"The action of sea water—salt water—is not favorable to this material in navy planes; besides it is very prone to perishing; also it is merely a superstition that an airplane constructed of aluminum or duralumin or similar alloys is necessarily lighter than one constructed of steel. In fact, the aluminum plane works out to be heavier because of the weakness of the material.

"In foreign countries aluminum is being rapidly dropped as a structural element in warplanes. Great Britain has now switched to stainless steel structures for navy and other planes, and exhaustive tests of this material in completed warplanes have proved its great superiority over aluminum for lightness, strength, and in every other way. Great Britain already has indestructible stainless steel seaplane floats and flying-boat hulls tested in actual collisions.

"Machines constructed of stainless steel require much less ground attention, and so effect a great all-round saving which offsets very favorably any increase of initial cost of production. In the United States are some factories capable of producing excellent stainless steel for warplanes, but they are not encouraged. Great Britain has always been suspicious of aluminum for the construction of airplanes."

And in his recommendations, Representative McFarlane includes this: "That a thorough investigation be made as to the desirability of future use of alloys of aluminum in the manufacture of our aircraft, and particularly the adaptability and usefulness of stainless steel for aircraft manufacture. That a comparative study of the use of these materials as to cost, maintenance, weight, length of life, ability to withstand salt water, etc., be carefully analyzed."

High-Speed Tankers Proposed

Some 100 tankships will be placed under contract in American shipyards during the next year or two, it is believed in well-informed circles here. The navy project to encourage the construction, by private owners, of 50-high-speed tankers which can keep up with the fleet, is a live proposition. The intention is to reimburse the owners the difference between American and European shipbuilding costs.

It is considered likely the shipping board, of the department of commerce, will loan some money toward the construction of projected tankers. These loans would be under the provision of the Jones-White act which authorizes loans up to 75 per cent of the cost of the ship.

In view of the fact that a large percentage of existing tankers are old, slow vessels, it is believed that when this construction movement gets under way it will develop large proportions. The shipping board now has before it several applications for loans to be applied to projected new tankers.

Industrial Men in the Day's News

Samuel E. Hackett, New President, Jones & Laughlin Steel Corp.

For over 30 years he has been active in warehousing, purchasing and sales for a number of steel companies.

Early part of his career was spent with interests in the Chicago district, later moving to Pittsburgh.

He is well versed in problems relating to river shipment of steel, his company a pioneer in this field.

SAMUEL E. HACKETT, who has been vice president in charge of sales, Jones & Laughlin Steel Corp., Pittsburgh, on June 1 became president of the corporation, succeeding George G. Crawford, who resigned after being president since early in 1930.

Mr. Hackett has been active in the steel industry for 33 years, his first position being with the American Tin Plate Co. in Chicago. In 1902 he became identified with the Chicago office of Republic Iron & Steel Co., leaving shortly afterward to join Joseph T. Ryerson & Sons Inc. at Chicago. Here he spent 14 years, most of the time in charge of the company's purchases.

In 1916 he was named Chicago warehouse manager for Jones & Laughlin, taking charge of all western sales. About three years later he was transferred to Pittsburgh as general manager of sales, succeeding the late J. L. Haines. Chosen a director in 1922, Mr. Hackett in 1924 following reorganization of the company was elected vice president in charge of sales.

River transportation of steel is a subject in which Mr. Hackett has shown active interest. On several occasions he has made addresses on that topic, and is unusually well versed in problems affecting such transportation.

He is a director of the American Iron and Steel institute, appointed in 1926.

□ □ □

R. C. Muir has been made a vice president in charge of the engineering department of the General Electric Co., Schenectady, N. Y. He began work with the company in 1905, first in the central station engineering department and later in the industrial engineering department. In 1919 he was appointed chief commercial engineer of the International General Electric Co., and in 1922 was made assistant engineer of the industrial engineering department. He left this post in 1930 to become general assistant to the late C. E. Eveleth, vice president in charge of design engineering, and last year was made manager of the engineering department.

C. E. Tullar, active with the patent department of General Electric since 1919, has been elected a vice president in charge of the patent department.

□ □ □

H. W. Story has been elected vice president and general attorney for the Allis-Chalmers Mfg. Co., Milwaukee. Long active in legal work, he became affiliated with the company in 1919.

□ □ □

Snowden Samuel has succeeded the late Frank Samuel as president of Frank Samuel & Co. Inc., Philadelphia. He also will continue as secretary, his duties as treasurer being handled by S. A. Cochran, vice president.

□ □ □

Seth H. Taylor Jr. has been appointed Pacific Coast manager of the Lincoln Electric Co., Cleveland, with headquarters in San Francisco. For the last four years he has been in charge of the Los Angeles office of the company, and previously was engaged in research and applications of production welding for the company in Cleveland.

□ □ □

John L. Vaupel has been appointed New England representative for the Phoenix Iron Co., with headquarters in Boston. For the past nine years he has been manager of sales for the A. O. Wilson Structural Co., Cambridge, Mass., and at one time was representative in the Boston office for structural and plate sales of Bethlehem Steel Co.

□ □ □

P. R. Dudley, formerly of Philadelphia and closely identified with the metalworking industry for the past five years, has been placed in charge of special sales work for the metal stamping division of the Dickey-Grabler Co., Cleveland, his territory comprising northern Ohio, western Pennsylvania, southwestern New York and southern Michigan.

□ □ □

Alfred V. deForest, widely known research engineer, of Bridgeport, Conn., has been appointed associate professor of mechanical engineering at Massachusetts Institute of Technology, Cambridge, Mass. His special field will include study of the dynamic properties of metals and

Arthur H. Smith

Who as noted in STEEL for May 7 has been appointed special representative of railroad sales in the East for the Youngstown Sheet & Tube Co., his headquarters to be in New York. He was formerly vice president of Railroad Materials Corp.

the relation between design, metallurgy and application of loads in modern machinery. From 1918 to 1928 he was research engineer of the American Chain Co. and since has been a consulting engineer specializing in the invention and application of various special test and inspection methods, notably magnetic tests.

□ □ □

H. M. Myracle has been made manager of the machine shop recently established in Houston, Tex., by American Iron & Machine Works, Oklahoma City, Okla.

□ □ □

B. D. Deweese, since 1930 vice president and general manager of the Stinson Aircraft Corp., Wayne, Mich., has been elected president, succeeding L. B. Manning who has resigned.

□ □ □

Harold V. Barker, sales engineer for the Ohmer Register Co., Dayton, O., has been appointed sales manager for Europe, with permanent headquarters in Paris. He sailed May 30.

□ □ □

C. D. Clawson heads a recently established new products department of the Ferro Enamel Corp., Cleveland. H. E. Ebright, vice president, again will assume active charge of the company's service department.

□ □ □

F. W. Copeland, formerly vice president of the Sullivan Machinery Co., Chicago, has been elected president of H. Channon Co., Chicago, wholesale hardware jobber, succeeding the late H. G. Elfborg.

□ □ □

Dr. Bruce W. Gonser has been appointed to the technical staff of Battelle Memorial institute, Columbus, O., to be active in the institute's recently announced (STEEL, May 28, p. 42) tin research program.

□ □ □

George R. Rossman, formerly with Franklin Valveless Engine Co., Franklin, Pa., has been placed in charge of the Kilgore, Tex., store of Bridgeport Machine Co., Wichita, Kans.

□ □ □

R. W. White has been elected treasurer of the Union Carbide & Carbon Corp., New York. He succeeds in this capacity W. M. Beard, who will continue as vice president and secretary. Mr. White was formerly general assistant secretary and general assistant treasurer.

□ □ □

A. P. Bronson, assistant manager of sales at Chicago, has been appointed resident manager of an additional office in the Chicago district located in the Bankers building, Milwaukee, for American Sheet & Tin Plate Co.

W. P. Andrews, formerly located at St. Paul, has been appointed assistant manager of sales in the Chicago office of the company.

Gunnar Palmgren

Who as announced in STEEL, May 7, has been appointed chief engineer of S K F Industries Inc., Philadelphia

□ □ □

H. G. Bughman Jr., secretary and treasurer of the Union Spring & Mfg. Co., New Kensington, Pa., has been elected president of the company, succeeding the late L. G. Woods. He will also continue as treasurer.

F. D. Schaeffer has been elected secretary, W. F. McCabe vice president, and A. M. McCrea to the newly-created office of chairman. Du Ray Smith has been named general manager.

□ □ □

Edwin W. Clark has been named assistant to N. A. Gladding, general sales manager of E. C. Atkins & Co., Indianapolis, saw and tool manufacturers. For the past 25 years Mr. Clark has been manager of the New York branch of the company, where he will continue to make his headquarters.

Edward S. Norvell succeeds Mr. Clark as local manager of the New York branch. Mr. Norvell previously was sales manager of the metal cutting and industrial departments of the company in Indianapolis.

Ray Ellis, formerly a chief clerk, succeeds Mr. Norvell.

To Simplify Heating Boilers

Simplification of steel horizontal fire box heating boilers will be considered at a meeting at the Hotel Cleveland, Cleveland, June 5 under auspices of the national bureau of standards. A proposed recommendation prepared by the simplified practice committee of the industry will be considered.

Died:

BENJAMIN F. MOHR, 71, formerly assistant vice president of the Illinois Steel Co., in Evanston, Ill., May 25. He joined the Illinois company in 1891 as book-keeper in the Joliet works, and in 1899 went to Chicago as assistant to T. W. Robinson, recently vice president. Mr. Mohr retired in 1932 under the pension plan of the Steel corporation.

□ □ □

Louis M. Henoch, 63, retired vice president of A. M. Castle & Co., Chicago, in La Jolla, Calif., May 26.

□ □ □

Charles McClain, for many years Detroit district manager of sales for Pittsburgh Steel Co., Pittsburgh, in Detroit, May 25.

□ □ □

Lionel J. Dougherty, 39, former purchasing agent for Graybar Electric Co. of Detroit, in Toledo, O., May 27.

□ □ □

Howard C. Davis, 47, associated with the Acme Steel Co., Chicago, in that city recently. He had been in poor health for six months.

□ □ □

R. J. Graham, 74, chairman of the board of directors of the Stewart-Warner Corp., Chicago, at his home in Belleville, Ont., May 24.

□ □ □

C. Arthur Lyman, 44, vice president and general manager of the American Ball Co., Minneapolis, shot manufacturer, in that city May 22 during a riot of striking truck drivers.

□ □ □

Harry Treusch, 40, formerly cashier for Jones & Laughlin Steel Corp., and more recently an auditor at the company's Aliquippa, Pa., works, in Pittsburgh, May, 23.

□ □ □

Frederick E. Goldsmith, inventor of machine tools and president of the Columbia Machine & Tool Co., Hamilton, O., at his home in Middletown, O., May 22.

□ □ □

John J. Davis, 58, former master mechanic of the Cleveland Furnace Co., and more recently master mechanic of the Lakeside plant of Otis Steel Co., Cleveland, in that city, May 13, following a short illness.

□ □ □

Edward M. Hewlett, 68, veteran engineer of the General Electric Co., at his home in Schenectady, N. Y., May 24. He was responsible for the development of the oil switch from which grew the modern oil circuit breaker. He retired in 1931.

□ □ □

Melvin B. Stone, 59, consulting engineer and president of the Northwest Concrete Steel Co., Minneapolis, in that city, May 12, after a long

illness. He aided in the planning and construction of numerous bridges and buildings throughout this country and Canada.

□ □ □

Claude E. Burnett, 52, president and general manager of the Premier Engineering Co., Dayton, O., at his home there. May 30.

Here and There In Industry

GLOBE STEEL TUBES CO., Milwaukee, has resumed work after being closed since May 9 by strike. The agreement with the workers excluded the demand for a closed shop. Three unions were involved, the Co-operative Steel Workers' Federal Union, the machinists' union and the electricians' union. An increase of three cents an hour from June 1 was granted, up to a 53-cent per hour level, with overtime after 44 hours a week and on holidays.

□ □ □

St. Louis Structural Steel Co., St. Louis, has established a complete materials handling department, covering design, fabrication and erecting.

□ □ □

Republic Steel Corp., Youngstown, O., has appointed Railey & Milam, 27-39 West Flagler street, Miami, Fla., distributors for Enduro stainless steel and Toncan Iron. The Republic company has also appointed the Ohio Valley Hardware & Roofing Co., Evansville, Ind., a distributor of Toncan iron.

□ □ □

Western Supply Co., Tulsa, Okla., manufacturer and distributor of oil field supplies, has opened a sales office in the First National Bank building, Dallas, Tex., in charge of Eugene Solow.

□ □ □

Timken Roller Bearing Co., Canton, O., has taken an order from the Edward G. Budd Mfg. Co., Philadelphia, for bearings and boxes to be used on a light-weight high-speed multi-section train for the Brooklyn-Manhattan Transit system in New York and Brooklyn, N. Y.

Australia—Where Steel and the Bush Meet

COWS grazing in the mill yard of the Australian Iron & Steel Ltd., at Port Kembla, New South Wales, are not a sign of inactivity but rather evidence that nature is retreating slowly as steel, vanguard of an industrial civilization, presses on.

At Port Kembla, 56 miles south of Sydney, on the shore of the Pacific ocean this Australian interest is operating several units forming the nucleus of a complete steel plant of the future.

There, today and tomorrow overlap in striking contrast. A cow on the porch of the main office is no surprise. At almost any times of the day a number can be seen about the mill yard. Within the plant is installed the most modern equipment.

During the recent holidays an old guide mill was dismantled and in its place was erected a modernly-equipped tandem type 10-inch continuous mill, comprising 12 stands. On this mill are rolled rounds, shapes and flats, up to 8 inches wide.

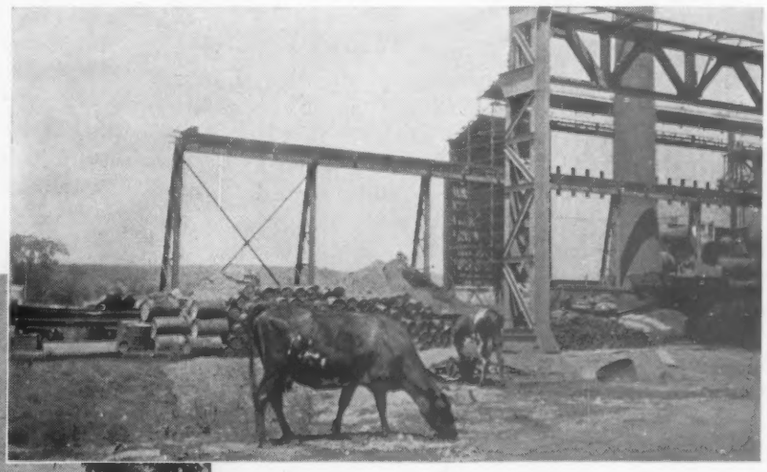
Under construction at this time is a sheet mill department of modern design including a 3-high water mill for breakdowns, 2-high hot mills for finishing, equipped with automatic feeding and catching tables. These mills have the Wean continuous pack and pair furnaces with automatic heat control. The roll train will be driven by a 1500-horsepower motor, through a Mesta gear of double flywheel type.

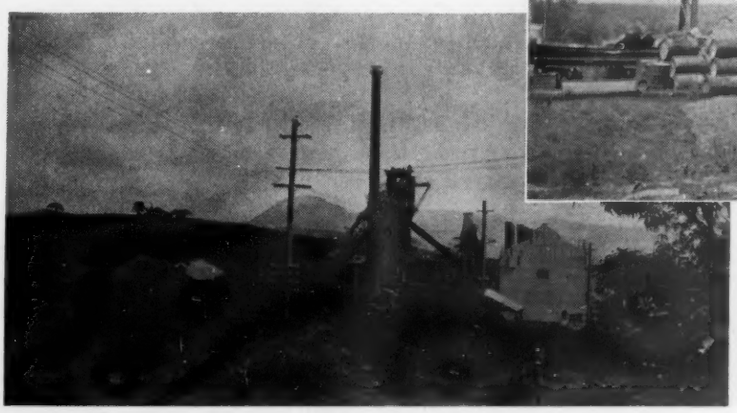
The installation, in addition to hot mills, includes cold rolls, annealing, pickling and galvanizing departments. The company anticipates operating the plant by August.

In its present state of development the Australian steel industry faces the handling of diversified demand for small lots. As an example, a blooming mill is also a plate mill, and the 36-inch mill at the Port Kembla plant must roll rails, rounds, shapes, billets and bars as part of the day's work.

Fred Scheussler, of Youngstown, O., and Dennis E. Benbow, of New Philadelphia, O., are associated with installation of the new equipment. The photographs illustrating this article are by Mr. Benbow.

The scene at the right is not incongruous, considering the state of development. Substitute a wooden waterwheel used for generating the blast, for the modern mill yard equipment shown, and you would duplicate the pastoral touch at an early American forge or blast furnace a century ago





Some Pennsylvania iron and steel plants can boast of a similar background of mountain scenery, but none can match the immediate wooded landscape

EDITORIAL

Retracing Steps of Error Is Only Way out of Labor Mess

TO INDIVIDUALS who have had experience or first-hand knowledge of the details of employer-employe-professional labor union relations since the advent of NIRA, the obstinacy of the administration at Washington in pursuing a course which has led and will continue to lead the nation deeper into the throes of misunderstanding, class conflict and increasing trouble for all interests is amazing.

Last June when the recovery bill was enacted, the relations between employers and employed were good, due chiefly to the fact that both sides had tried to make the best of the intolerable conditions imposed by the depression. At that time the majority of employers were pursuing a more enlightened attitude toward the interests of their workmen than had been the case in any previous lean period. Unfortunately, a usual minority of employers were dealing unfairly with their employes.

At this stage NIRA with its famous Section 7a was thrust into the situation. The spread-work feature of the law compelled the unfair minority to do what enlightened employers had attempted to do voluntarily before the act was passed. In its early stages, NIRA was hailed enthusiastically by the public for its accomplishment of eliminating child labor and sweat shop conditions.

Simultaneously with the recognition of these desired achievements, came the realization by professional labor union leaders that NIRA opened the way to new opportunities for increasing the membership of their national unions. Soon the word was passed around that the President would make every employer sign a code and that operation under a code would involve recognition by the employer of a national union. The effectiveness of this wilful distortion of facts was heightened by the neglect of the NRA administration to clarify Section 7a.

Mistake of Ambiguity of Section 7a Has Been Aggravated by Labor Board and Wagner Bill

The continued ambiguity of the collective bargaining clause encouraged further excesses on the part of professional labor unions, and in turn attracted to the scene hosts of radicals, communists and other outside professional malcontents who had been inactive in labor circles for many years. The efforts of this motley assortment of agitators—many of whom had no concern for the interests of employes other than the money which could be extracted from them—were made easier by the amazing action of many leaders in the government administration in belittling company representation plans, some of which had worked satisfactorily for years.

Having gone from bad to worse in its administration of Section 7a, the representatives of the government next established the national labor board. While it was instrumental in ironing out labor difficulties in many cases, it failed signally to solve the basic points at issue. The original Wagner "labor disputes" bill, which would have confused the situation still further, was withdrawn. Today its successor, the Wagner "national industrial adjustment act," is under attack, not only by industrial employers but also by professional labor union leaders, because in their opinion it will make matters worse instead of better. To cap the climax, the President, in extending the steel code, promises to "undertake promptly to provide . . . . for the election by employes in each industrial unit of representatives of their own choosing for the purpose of collective bargaining," etc. Issued in the face of the refusal by Federal Judge Nields to grant the government a preliminary injunction against the Weirton Steel Co., the pledge by the President needs clarification.

Result of Inept Handling of Labor Problem Is Poor Deal for Labor, Hardships for Employers

The net result of nearly 12 months of subterfuge is that the legitimate professional labor unions (those which were actually serving members last June) now are hampered by a new hord of thugs, racketeers, and nondescript radicals. Employes everywhere who were buoyed up by the early promises of NIRA, are beginning to realize that it is beyond the power of the government to deliver benefits as liberally as had been anticipated; consequently their hope will turn to discontent or hate. Moreover, this in the end will react unfavorably against the legitimate national labor union movement. As for employers, such progress toward improved labor relations as they might have made through enlightened leadership has been retarded by their preoccupation in protecting themselves and their employes against the unfortunate results of the bungling of the labor problem.

The only way out of the mess is to retrace the steps of error to a sound foundation point. Then rebuild on the basis of honest concern for the welfare of *all* employes, keeping in mind the fact that playing one interest against another will wreck the new structure just as it has contributed to the present impasse.

THE BUSINESS TREND

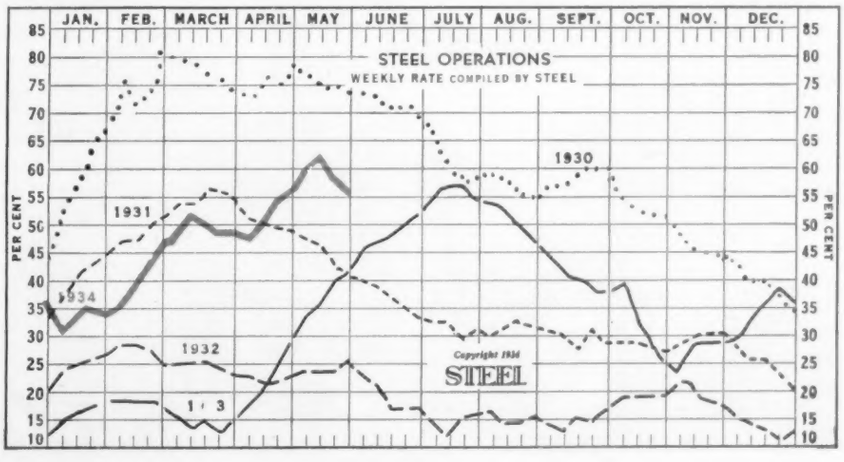
Business Shows Resistance To Downward Trend

INDUSTRIAL activity is displaying strong resistance to the apparent recession which was indicated several weeks ago. Revenue freight car loadings turned upward in the third week, after minor declines in the two previous weeks. Automobile output, which has been so clearly on the skids, actually showed a modest gain in the week ending May 26. Steelworks operations, which attained a peak of 62 per cent in the week ending May 12, dropped to 59 and then to 57 in succeeding weeks, again turned upward in the week ending June 2.

These interruptions to recession are the result of numerous conflicting factors, some of which will continue to distort the true picture of business for some time to come. For instance, the strikes and threats of strikes contribute an artificial influence, which under certain conditions curtails production, and, again, in some cases, incites greater output. The outcome of certain legislation now pending in Washington also will have a bearing upon the business trend. Because of these and other uncertainties, the chart of business activity probably will be a saw-toothed affair during the next few weeks. Adjournment of congress, now expected to take place about June 9, may clear the air of some uncertainty as to laws affecting industry and consequently may contribute to a more definite outlook for business. Moreover, the securities market shows signs of a somewhat stronger tone. If it should shake off the jittery complex, which has characterized its actions during the past three months, the effect upon business generally would be wholesome.

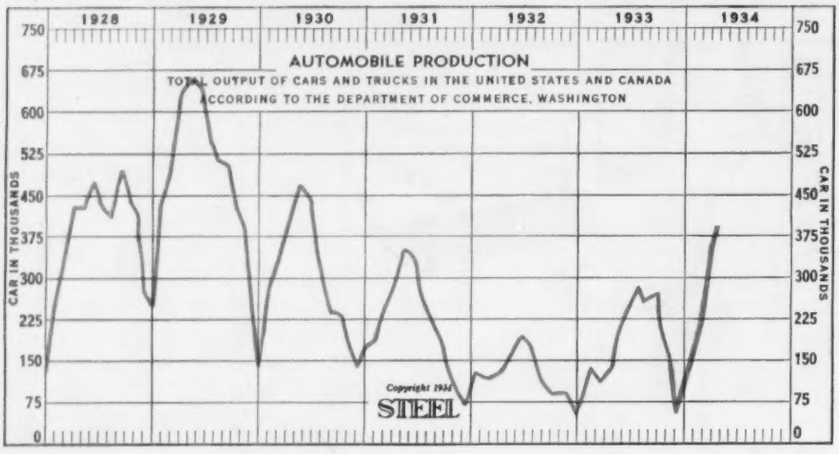
Government Aid in Building Is Ineffective; Private Enterprise Is Key To Situation

A large sector of the business world—that which embraces the building industry—still is in the doldrums. On a square footage basis, building construction in the first four months of 1934, while 27 per cent ahead of that for the comparable months of 1933, still remains at a discouragingly low level. In building as in engineering construction, the effort of PWA and other government agencies has furnished only a mere fraction of the work which ordinarily should emanate from private enterprise. This record again shows that the key to the situation lies in the encouragement of private investment.



1934	
May 26	57
May 19	59
May 12	62
May 5	60

1933	
May 27	43
May 20	40
May 13	36
May 6	33



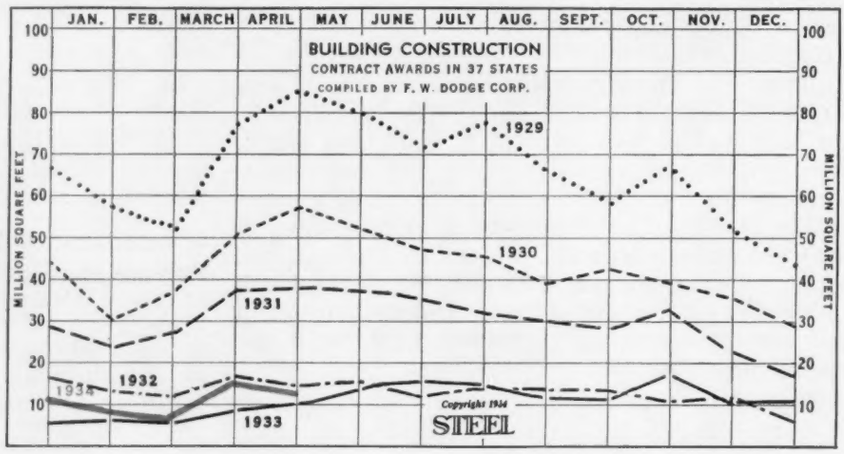
April, 1934	378,983
March, 1934	350,173
April, 1933	188,968

April Automobile Production Highest Since 1930

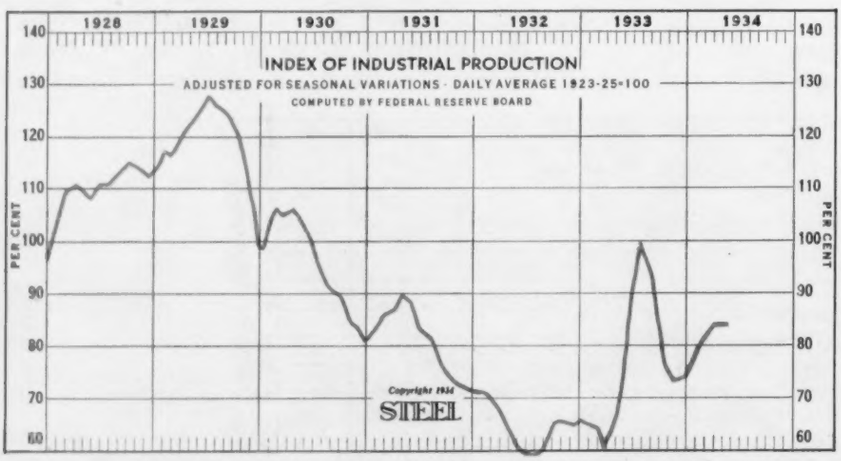
Automobile production in the United States and Canada during April advanced to the highest point since the summer of 1930. The latest report from the department of commerce places the output of passenger cars and commercial motor vehicles at 378,983 units of which 18,363 were produced in Canada. Output in March totaled 350,173 units and in April, 1933 production was down to 188,968. In the four months of 1934 total output at 1,141,-121 units has more than doubled the production rate in the comparable period of 1933.

Building Trend Shows Slight Improvement Over Last Year

Building awards as measured in new floor space in 37 eastern states declined slightly in April. According to the report of F. W. Dodge Corp., total construction for the fourth month involved 14,207,100 square feet as compared with 14,788,900 in March. During April, 1933 awards totaled 10,-870,400 square feet. In the four months of 1934 awards for new floor space have aggregated 46,866,000 square feet compared with 36,595,500 square feet in the same period of 1933.



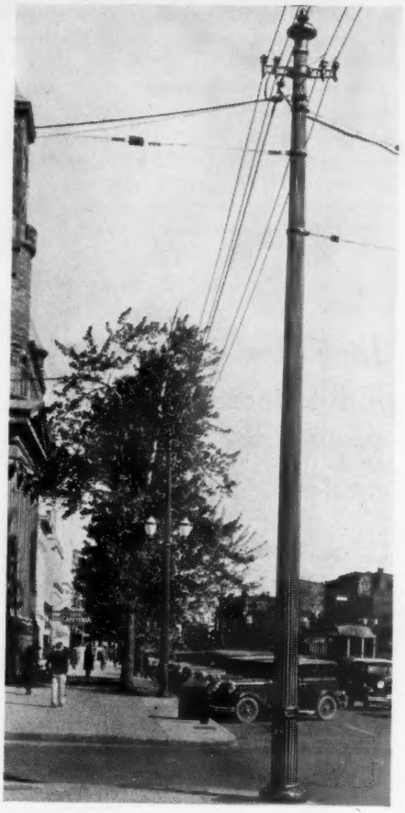
	Square Feet
April, 1934	14,207,100
March, 1934	14,788,900
April, 1933	10,870,400



April, 1934	85
March, 1934	85
April, 1933	66

Industrial Production Index Holds During April

Industrial production as reported by the Federal Reserve board, remained unchanged in April. The monthly production index, adjusted for seasonal variation, stood at 85 unchanged from the revised figure of the preceding month but considerably above April, 1933 when the index stood at 66. In the manufacturing group, the iron and steel production index advanced 10 points to 77 and compares with 35 in April, 1933. Increases also were reported for food products, tobacco manufacturers, petroleum and automobiles, the latter advancing 7 points to 87.



From Poles To Piling

How Fluted Steel Tubes —An Old Product—Were Adapted To a New Use

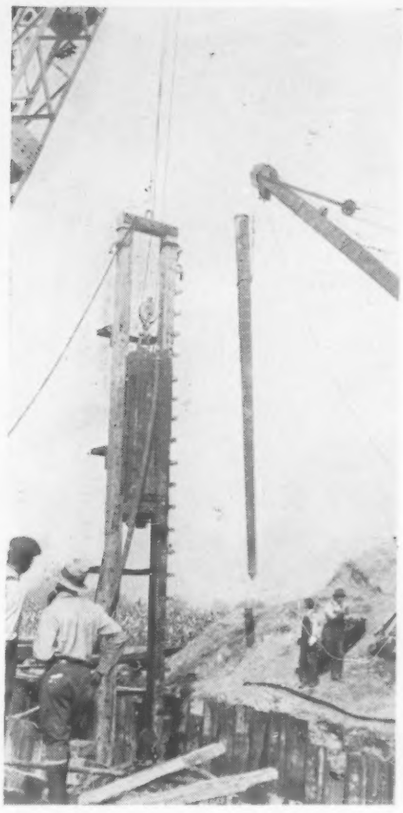


Fig. 1 (Left)—Fluted, arc welded steel tubes used as heavy-duty transmission poles. Fig. 2 (Right)—Fluted steel pile shell ready to be placed in position for driving

EVERY period of depression witnesses the introduction of many new products and the development of new uses for old products. During the past few years, the curtailment of activity in certain markets has been more drastic than in others, with the result that manufacturers have attempted to find new products for, or adapt old products to the more promising fields of activity.

One of the most unusual adaptations of an established product to a new use has been pioneered successfully by the Union Metal Mfg. Co., Canton, O. For many years this company has manufactured fluted steel tubes for lighting standards and heavy duty poles for transmission and distribution lines. The company now has developed the use of these tubular steel products as shells for cast-in-place concrete piles.

The poles, or piles, depending upon their ultimate use, are formed from steel plate, of various thicknesses from 11 to 3 gage or heavier, into continuously tapered tubes. The longitudinal seam is then shielded arc welded by the electronic tornado process, using automatic welding equipment manufactured by the Lincoln Electric Co., Cleveland. The tubes are then cold rolled and fluted and the rough ends cut off. The longitudinal weld is practically invisible. For piling a pointed steel nose is arc welded to the driving end and a steel collar welded to the butt end. The arc

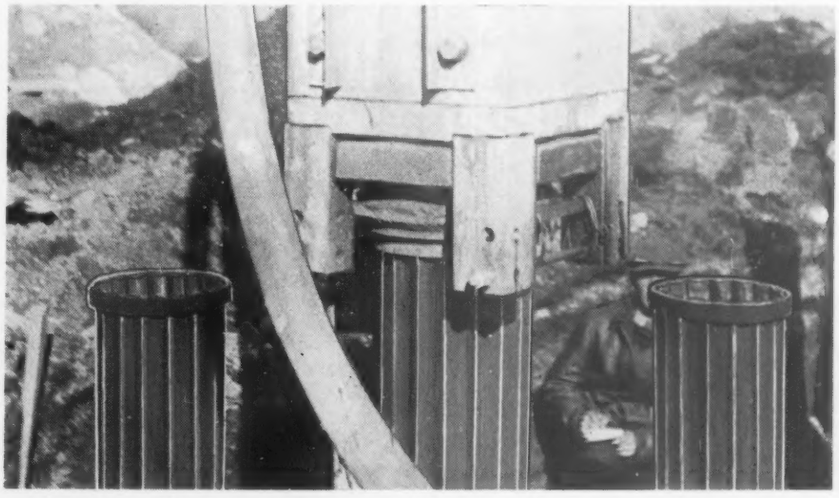


Fig. 3—For driving, a pointed steel nose is welded to the smaller end and a ring is welded to the butt end of the fluted tube

The shells withstand the repeated, heavy blows of the pile driver without damage to the longitudinal welds of the tubes

Fig. 4—Pile shells in place for bridge foundation at Niles, O., before pouring concrete

welded construction makes the shells essentially one-piece and absolutely water tight.

The use of fluted tapered tubular construction provides exceptional strength per pound of steel. Fluting adds rigidity and provides approximately 12 per cent more surface area for bearing than does pipe or a plain round tapered tube.

Sections Joined for Length

Casings are driven in lengths up to 80 feet or more. When the length is over 40 feet, two sections are welded together to form one casing. Although the shells must withstand tremendous blows while being driven through hard packed and rocky soil, so far as is known no weld has failed on the job. This new type piling usually is driven without the aid of a core or mandrel so that the steel must withstand not only the blows of the hammer but the lateral forces in the ground due to back pressure or to the driving of other piles in close proximity.

Test piles driven recently were driven with a 5000-pound hammer to a final resistance of 4½ to 5 blows to the inch. As high as 800 blows were necessary to drive the piling to ultimate depth of 45 feet 6 inches.

Forty-foot fluted steel test piles driven at the side of the Third Street bridge, Hamilton, O., were driven with blows up to 52 per foot through gravel filled clay and boulders. These were 7 and 11 gage piles and when inspected showed no damage or distortion of the shell.

Eleven gage fluted steel piling shells manufactured by this company are used on the new municipal incinerator plant at Cleveland, the largest plant of this kind yet built in the United States or Canada. A total of 506 piles of 60 foot length and 200 piles 50 feet in length were driven on this project.

Fig. 2 shows a piling shell being placed in position for driving. In Fig. 1, exactly the same type fluted steel unit is illustrated as it is used for heavy duty pole work. Here the welded tapered tube is equipped with an ornamental base and top and fittings for supporting trolley span wires and distribution lines. The pole is fastened to a concrete foundation by means of anchor rods set in concrete. In some cases the poles are set directly in a concrete foundation.

Thus one company has used its ingenuity in adapting its product to new uses in an entirely new field and thereby expanded its market tremendously. While it seems a long step from heavy duty poles to piling, actually there is a close relationship. In many cases the pile casings extend above the ground level where they act as columns. Frequently the poles are anchored directly in concrete and may act as columns to support signs or other loads.

Statement in Institute Paper Is Corrected

STEEL in its issue of May 28 reproduced the paper which L. S. Marsh, manager, department of inspection and metallurgy, Inland Steel Co., Chicago, presented before the meeting of the American Iron and Steel institute in New York, May 24, this paper giving the progress and outline of the work of the institute's technical committee of which Mr. Marsh is chairman.

Because of an error in copy supplied to STEEL, it was stated on Page 32 in the first sentence under the subhead "Recommends Uniform Interpretation" that "Competition should be based on the technical details of a specification and certain requirements in a specification calling for a definite quality of material should be interpreted by all manufacturers in the same manner." As corrected, this sentence should read "Competition should *not* be based on technical details of a specification, etc."

Using New Electrode on Bridge Reconstruction Job

Lehigh Valley railroad is completing the reconstruction of an old deck bridge at Allentown, Pa., reinforcing and replacing rusted plates and other members. This is an unusual welding job, in that about 75 per cent of the welding is either vertical or overhead. For this work, an electrode, known as W-20, made by the General Electric Co., Schenectady, N. Y., is being used.

This electrode is heavily coated with a special flux which, in addition to improving quality of welds, as regards strength, ductility, resistance to impact, corrosion, etc., permits its use in the vertical and overhead positions with relative ease. About 5000 pounds of electrodes are being consumed in this job.

Tests Reveal Permeability Of Refractory Samples

A method for determination of permeability of refractory materials to gases is described in technical bulletin No. 49 of the American Refractories institute, recently published. The discussion is abstracted from a series of articles by F. H. Clews and A. T. Green. Permeability is determined by forcing air or nitrogen through a cylindrical test piece sealed in a suitable container in such a way that the gas under a definite pressure can be applied at one end of the cylinder and forced to travel through it and out the opposite face.

It is concluded that the factors governing the flow of gas through a refractory are the number and dimensions, direction and nature, and continuity of the pore systems. Such properties are dependent on (1) the grain size and the grading of the raw batch materials; (2) the manufacturing processes, chiefly including pugging, shaping and pressing; and (3) the firing period of the refractory material. Permeability test results on a wide range of refractory samples are listed.

Requests for copies of this report should be addressed to S. M. Phelps, refractories fellowship, Mellon Institute, Pittsburgh.

Conveyors and Unloaders Aid In Grinding Spring Rods

ADOPTION of independent front wheel suspension in a number of recent models of automobiles has introduced several new problems in which it has been necessary to adapt certain machining operations to the requirements of mass production.

One of these is the grinding of spring rod or wire before it is coiled into springs. Grinding the rod in straight form is desirable for two reasons: (1) It insures the necessary accuracy in roundness and straightness of the rods, and (2) it aids the inspection of the rod for minute flaws.

Centerless Machines Used

Grinding of long spring rods in the plant of one leading automobile maker is performed on centerless grinding machines made by the Cincinnati Grinders Inc., Cincinnati. As may be observed in Fig. 1, the grinding machines are arranged in pairs with a fixture or unloading device shown more in detail in Fig. 2, between them. Two long conveyors on opposite sides of the row of machines supply rods to the machines, and carry away the finished rods.

The incoming conveyor is at the left of Fig. 1 as are the rough grinding machines while the finish grinding machines and outgoing conveyor are at the right. The rods are 11/16-inch in diameter and 12 feet long, and are held to within 0.002-inch diameter on rough and finish grinding, 0.001-inch for straightness, and 0.001-inch for roundness. From 0.015 to 0.017-inch of stock is removed in the grinding operations, and the production rate is 12 feet per minute gross, or 9 to 10 feet per minute net of finish ground rods per pair of machines. Since there are seven banks or pairs of machines, the net hourly production of the department is 320 to 350 rods, 12 feet long, ready for the next operation of twisting into spirals.

Rough grinding rods is performed on a large No. 3 centerless grinder using 24 x 6 x 12-inch wheels, and finish grinding is accomplished on a No. 2 centerless machine employing 20 x 6 x 12-inch wheels. Both types of wheels are 60 grit, grade H, aluminum oxide abrasive, made by Carborundum Co., Niagara Falls, N. Y.

The fixture or unloading device located between the rough and finish grinding machines supports the leading end of the rod emerging from the long bar attachment until it is kicked out of the latter by the rod directly behind it. When the rod is completely out of the long bar fixture, and into the unloader, the total weight of the bar causes the cradle to drop as it is held in position by a spring adjusted to hold approximately 75 per cent of the total weight.

When the cradle drops, the bar is permitted to roll down the ways into position for insertion into the long bar attachment on the succeeding machine. After the bar drops, the cradle is pulled back into position by the spring previously mentioned. The unloaders are adjustable so that they may be lined up with the long bar attachments of the machines. Similar devices are placed at the end of the finish grinding machines, to hold the rods until they can be removed and placed upon the outgoing conveyor.

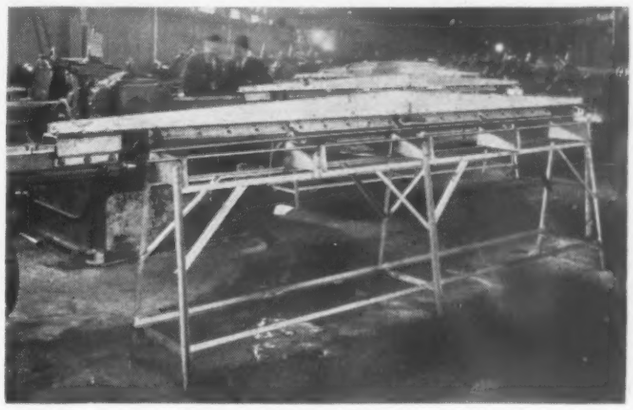


Fig. 2—Unloading device, which takes rough-ground rod from roughing grinder and delivers it to the finish grinder

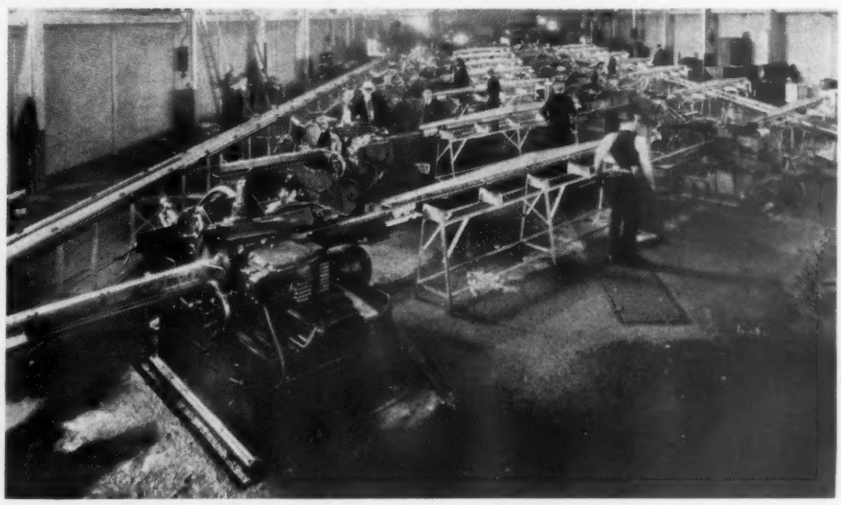


Fig. 1—Layout of grinding spring rods. From left to right are shown the incoming conveyor, a row of rough-grinding machines, a row of unloading devices, a row of finish grinders and the outgoing conveyor

High-Temperature Insulation Reviewed for Students

Short review of the principles of heat transfer; discussion of the theory and practice of conductivity values of insulation and refractories; insulation in boilers, kilns, oil stills, furnaces, regenerators and other typical industrial equipment operated at high temperatures are subjects covered in a lecture "High Temperature Insulation" prepared by the engineering department of Johns-Manville, 22 East Fortieth street, New York, and used each year by schools of mechanical, chemical, metallurgical and ceramic engineering throughout the country.

The lecture has been published in the form of a 32-page illustrated pamphlet copies of which are available to readers of STEEL upon request to Johns-Manville.

Unit Finishing of Sheets by Decalcomania Methods

BY DR. SAMUEL P. WILSON
Varnish Products Co.

TO THE orderly mind of the engineer, present methods of finishing are often a source of annoyance. He may lay out a complete production line for his part, so that his metal is stretched, blanked, stamped and even assembled on production schedule and to whatever accuracy is required of the particular job. Then, when the finishing room gets the product, numerous factors arise to disturb the orderly sequence of events. No two spraymen are of equal proficiency; control of pressure, cleanliness of nozzles, cleanliness of the metal itself, nature of the finishing material, temperature of the room and many other variables bob up to create rejects, poor workmanship and continual disputes between the stamping room, finishing room and inspection department.

At another point in the plant, the engineer in charge of design has another viewpoint of finishing. He has complete control of the dimensions, lines, and curves of his object. Within reasonable limits, he has a satisfactory choice of material of which to make it. But when it comes to setting a finish that will startle competition, revamp completely the probably timeworn appearance of his product and give his sales force new enthusiasm, he is often met by a barrier of disconcerting proportions.

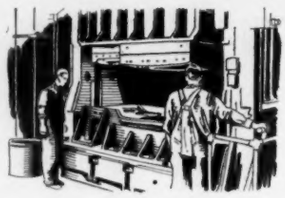
Broad Choice Possible

Solid colors of all shades and tints are available, in oil enamels, synthetic enamels or lacquers; of all grades and all prices, yet approximately the same in appearance. He can apply wrinkle finish, possibly use one of the crystal lacquers, spatter, veil, or crackle. A wide choice, it is true—much wider than ever before— yet all the above are employed universally, no longer novel, and unless ideally applied, are far from the attractiveness of which the designer dreams. If we were to ask him, he would say that if, without hiring artists, he could apply uniformly a coating that would duplicate wood or marble, snakeskin or onyx, elaborate engine turning or chasing, or whatever other finish pleased him and would be accepted eagerly by his sales force, he would be content.

To a surprising degree, this is now possible. There are now available two systems based on radical improvement in the art of decalcomania, that make possible as ornate and complex a finish as required, with really less labor, and in many cases less expense than present imperfect approximations.

To begin with, the problem arose in connection with the graining of automobile instrument boards. These are made of fairly heavy steel, stretcher leveled, drawn, punched and trimmed in a rigorous series of operations. The system of finishing has been to apply a groundcoat of desired color; bake; apply the desired grain with a composition roller inked off a copper plate, photo-engraved from the wood; force dry the ink; lacquer with one or two coats; and rub or polish.

A good approximation to a wood finish was obtained, but naturally only the background colors and the ink were available to reproduce the myriad shadings of true wood reproductions. The finish had to be applied to irregular shapes, meaning hand operations at all points. In rubbing a board, it was often easy to rub through the edges, necessitating touching up. Spraying individual boards is costly in time and material, and the whole system is opposed to the rapid, mechanical transit from operation to operation, characteristic of the motor industry.



The opportunity to better this system arose with the ability to make decalcomania transfers in which a lacquer was first applied to the paper, the various designs printed thereon in as many colors as the customer was willing to pay for, and this then applied to a groundcoat of such nature that both the latter and the lacquer topcoat were adhesive and flexible enough to sheet steel so that the finished sheet, with the transfer applied, could be cut, stamped, drawn, or otherwise formed without harm to the design.

This type of transfer thus makes it possible to apply any desired design, under rigorous production schedule, to practically all objects stamped, pressed, or drawn of sheet metal of the gage and dimensions encountered in production. Any wood grain, marble, pictorial or floral effect—in fact, anything an artist can draw or a camera photograph, is available.

Two variations of the method are now on the market. In the first system, a groundcoat of the desired color is sprayed on the metal, generally heated to 100 degrees Fahr. or higher. At the proper state of tackiness, the transfer, which includes the basecoat of clear lacquer and the design, is rolled on the metal, the paper removed by water, and the sheet baked—a typical schedule being at 275 degrees Fahr. for 30-45 minutes. At this point the sheet is ready for forming, the usual oil and drawing compounds being used. After forming, a coat of clear lacquer suitable for polishing is sprayed or dipped on, and after drying, is polished or dull-rubbed. This method is being used in the automotive industry at present for instrument boards, vanity boxes and similar parts.

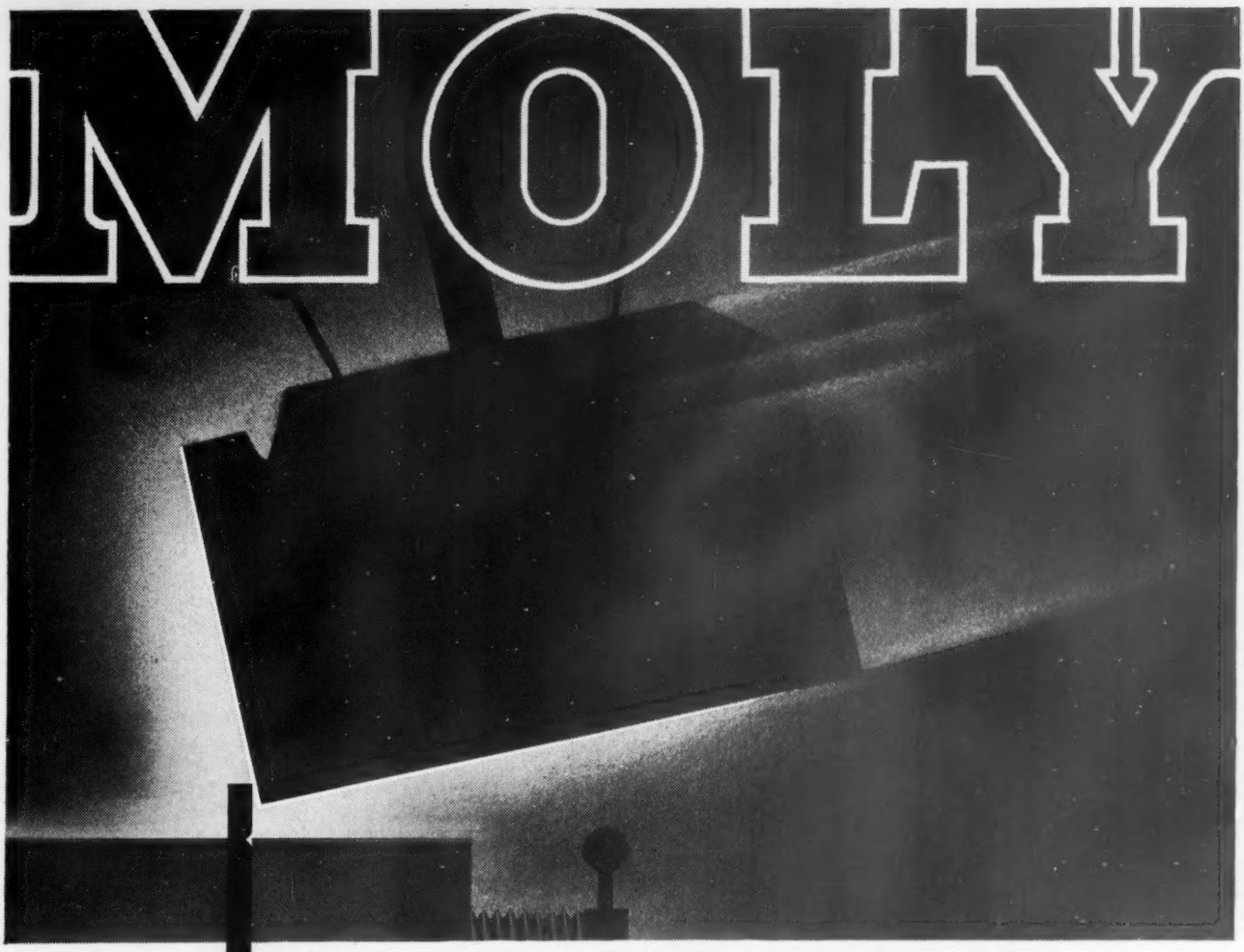
All Elements in Transfer

The second and newer system has certain unique points. The transfer in this case carries all the essentials, namely: A groundcoat for adhesion to the metal and to supply background color; the required design; and a clear cover coat, which in itself is flexible enough to stand the forming and yet hard enough to be polished without additional coats of lacquer. By this process, one needs merely a sheet of metal, a transfer and a mild solvent cement. The metal is cleaned, the transfer moistened with the cement, then rolled on to the metal. The paper is stripped off, the sheet baked, usually at 325 degrees Fahr. for 1 hour, polished and then formed.

This method comprises true "unit finishing." No spray guns are needed. There is no question of the right condition of the groundcoat, as it is moistened just before use. It is conceivable that by a purely mechanical system, sheets of steel could be automatically cleaned; the transfers moistened and applied; the paper removed; the sheets baked and polished; thus leaving nothing to do but form and assemble as customarily done on the conveyor line. In addition, an unlimited variety of designs is made available, giving any user the equivalent benefit of the artistic staffs of the decalcomania company manufacturing this product.

As possible users, only a few can be cited: Metal furniture and partitions; clocks; metal radio cabinets of the midget type; compacts; trays of all types; lighting fixtures; and many others. Brass and copper also are suitable as base metals, as well as aluminum, insofar as it is susceptible to forming.

The author, Dr. Samuel P. Wilson, is technical director, Varnish Products Co., 12900 Berea road, Cleveland.



The "Izod" test

ELIMINATES TEMPER EMBRITTLEMENT IN STEEL

Embrittlement is the bugaboo of high-temperature steels, and the cause of much trouble when drawing other constructional steels. It can be conquered! A small amount of Molybdenum will retard temper embrittlement, while a .75% addition will completely eliminate this dangerous trouble.

The following comparison of two similar steels, with and without "Moly," shows the effects of this extraordinary alloy when one sample is cooled slowly and another water-quenched after tempering at 1150° for two hours:

Analysis			*Impact (foot pounds)*	
C	*Mn*	*Mo*	*Cooled in water*	*Cooled slowly*
.36	2.24	Nil	74	4
.30	2.30	.52	59	50

In high-temperature installations, a similar condition is often encountered. Why take a chance when the difficulty is so easily and economically overcome?

Molybdenum is one of the greatest discoveries in alloy history. Its many-sided qualities for improving steel and iron have excited the wonder of the engineering and metallurgical world. Resistance to fatigue, shock, creep, abrasion, corrosion and temper embrittlement has definitely been increased under Moly formulae repeatedly tested and proved in service. Machinability of heat-treated steels is economically increased without loss of strength or other essential qualities. *Write for our latest book on Molybdenum.* Discuss your alloy problems with our modern experimental laboratory and engineering service. Climax Molybdenum Company, 295 Madison Ave., New York.

CLIMAX Mo-lyb-den-um

Architect's conception of the Los Angeles steel house as it will appear when completed. Wall sections are of welded, cellular steel construction; roof trusses also are of steel

West Coast Steel House Uses Cellular-Type Wall Units

A NEW development in steel buildings, said to be the first of its kind, is to be found in a steel house now being erected in Los Angeles. The outstanding feature of this project is that all load-bearing walls are of a cellular steel construction and are embedded in a concrete slab which is used as a floor or foundation.

The strength of the steel walls renders the building quake and wind proof, while the inherent properties of steel also are proof against fire, termites, dry rot and fungus deterioration. By means of a specially designed steel sash and window screen, the house can be made burglar proof, even when the windows are open.

The house, shown in the accompanying illustrations, is being engineered and built by Palmer Steel Buildings Inc., Los Angeles, at the corner of Windsor and Wilshire boulevards. According to Walter Guedel, treasurer and general manager of the company, the technical details of the steel construction are as follows:

Cellular steel vertical wall sections of 12-inch widths and any lengths up to 30 feet, with male and female joints or locking devices on either side of the length of the section, are locked into a concrete slab by means of a dovetail groove which is poured with sloppy grout after the wall section is set in the groove. A steel rod is run through a hole in the section below the level of the concrete slab before the grout is poured.

Sections Are Spot Welded

The cellular steel walls are made of "W" cellular cold-rolled sections spot welded on the open side of the "W" to a steel flat plate. The sections are usually 4½ inches thick allowing ample air space for ventilation and insulation and affording finished walls as thick as 7 inches which makes for deep reveals for windows and doors.

The finished structure is designed to have its weakest point the gravity bond between the earth and the concrete slab, so that in the event of a severe shake, the house will slide on the ground before it will distort.

In the case of a 2-story structure, the cellular steel sections run continuously from the concrete to the eaves without any break or cleavage line at the top of the first story. The second floor joists are either open truss steel joists or wood joists. In either case these joists are hung on heavy steel rods running through holes in the cellular section at any desired point and which rods lie within the plane of the steel wall.

The interesting fact about this house is that its use of steel as out-

(Please turn to Page 49)

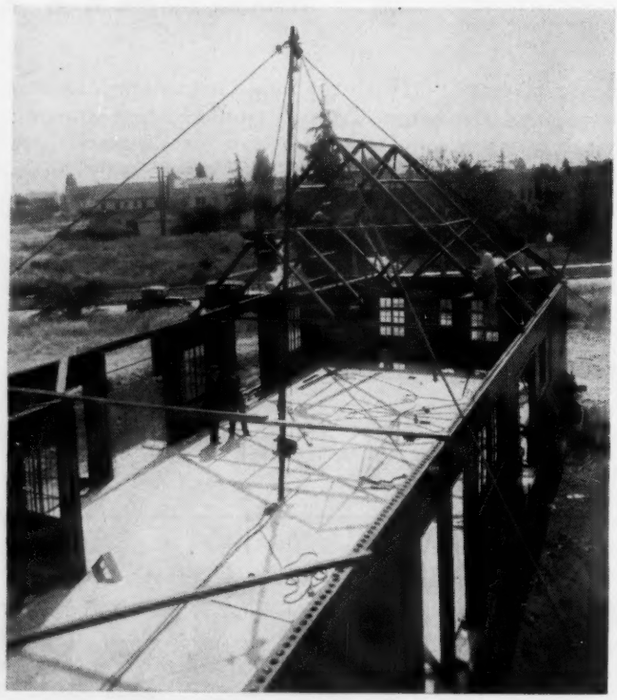
THE accompanying article, seventh in a current series, describes briefly a new type of steel house now being erected in Los Angeles. Specially designed to withstand earthquake, wind and vermin hazards, the construction introduces several interesting and unusual features.

Other types of steel houses have been described in recent issues of STEEL *as follows: April 2, Page 30; April 9, Page 37; April 16, Page 30; April 23, Page 28; May 14, Page 30; and May 21, Page 28.*

◆

DETAILS of the load-bearing steel walls are shown in this illustration. The steel roof trusses are being placed in position

◆



FAIRBANKS MADE IT *Simple*

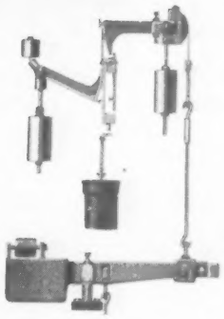
THE modern scale, itself, is a Fairbanks invention! The first springless dial scale was a Fairbanks achievement. The long list of scale improvements since 1830 is a record of Fairbanks engineering.

Today, the Fairbanks Dial Scale has been brought to its peak of simple efficiency by Fairbanks research.

Fairbanks has made the dial *simple* and *trouble-free*. A sound design which spreads the dial mechanism to *fill* the housing permits the use of large, sturdy parts.

Fairbanks Dial simplicity means long life and retained accuracy under the most adverse of service conditions. It is the reason why the Fairbanks Dial Scale is the choice of men alike who know scale mechanisms—and the choice of those who judge by performance alone. For bulletins on Fairbanks Scales for your particular service, write, telling us in what kind of service you employ scales, to Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Illinois. And 40 Principal Cities—a Service Station at Each House.

Rear view of dial mechanism. Note large, sturdy parts.



Dial mechanism removed from housing—to show simplicity.

Fairbanks Scales

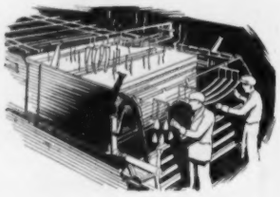
PREFERRED THE WORLD OVER

6114-SA40.6

Making the Most *of* METHODS AND MATERIALS

New Electroplating Method Gives Thick Nickel Deposits

A new process for the electrodeposition of nickel is said to produce thick deposits of great brilliance and beauty. These are obtained, according to the claim, even at high current densities, in a highly efficient and stable electrolyte which is entirely self sustaining from the anode. Among advantages in quality of product and operating economies are listed: Nickel deposits of great brilliance and beatuy, irrespective of thickness; elimination of subsequent polishing or color buffing; elimination of re-racking or re-cleaning



previous to chromium plating; high throwing power; a highly efficient, stable, self-sustaining electrolyte with a wide operating range; and uniform results at low or high current densities. The process does not entail major changes in equipment or preparatory cleaning methods.

$ $ $

Electric Heaters Save Fuel, Lower Maintenance Costs

A New England cutlery manufacturing company checked up on its large fuel-fired steam boilers and found that they were operating during the summer months to supply a small amount of steam for some small drying cabinets, a central glue cooker and two water tanks for washing metallic parts. As a result of this survey, electric heating units were installed; strip heaters were placed in the warming closets and in the glue cooker, immersion heaters were placed in the two water tanks. Inexpensive thermostats were used to control the temperatures automatically. The total installed cost was $346. In the first year of operation, more than that amount was saved, for boiler room maintenance was reduced $292 and the saving in fuel was $134, a total of $426.

$ $ $

Weld of Base Metal Found Better for Enameling

In designing products which are to be fabricated by oxyacetylene welding and finished with porcelain enamel, it has been found advisable to so design that the greater portion of the weld consists of base metal alone, whether the weld is of butt or lap type. The reason for this is that when additional metal is added to the weld in the form of filler metal there is always a possibility of oxides being entrapped in the weld as the filler metal is mixed into the molten pools of base metal. When the part is fired, the entrapped oxide creates a blister in the weld which is difficult to cover with porcelain enamel.

$ $ $

Celluloid Paste on Casting Molds Provides Stiffness

Elimination of the necessity of baking molds for castings, but obtaining a mold that possesses the desired stiffness, and properties of disintegration, is said to be accomplished through the use of celluloid, according to a recent patent. The celluloid is dissolved in acetone, butanol or other solvent to form a paste which has a very slight tendency to flow, but which may be handled by a paddle. The paste is added to the desired sand in the proportion of 10 to 25 per cent paste to 90 to 75 per cent sand, and the sand is used as a facing only; the remainder of the mold being made of green sand. Another method of using the celluloid is to make a thin solution and spray it on the face of a mold made in the usual manner.

$ $ $

Reclaiming Steel Pipe Rolls Accomplishes Saving

Paper rolls are constructed of 6-inch diameter extra heavy steel pipe. Two slots are cut in each end into which the dogs on the paper roll collars fit to turn the roll while the paper machine is in operation. Due to the nature of the operation, there is considerable breakage of the roll ends, particularly when lifting the paper by ends of the rolls. When damage occurs, the rolls are cut off back about 12 or 13 inches and a new piece of pipe is welded on. New slots then are cut by means of the cutting blowpipe to take the dogs. Discarded rolls are used for this work, as each section will make up one or more ends. A new roll costs $9, whereas the cost of reclaiming a roll is about 60 cents.

$ $ $

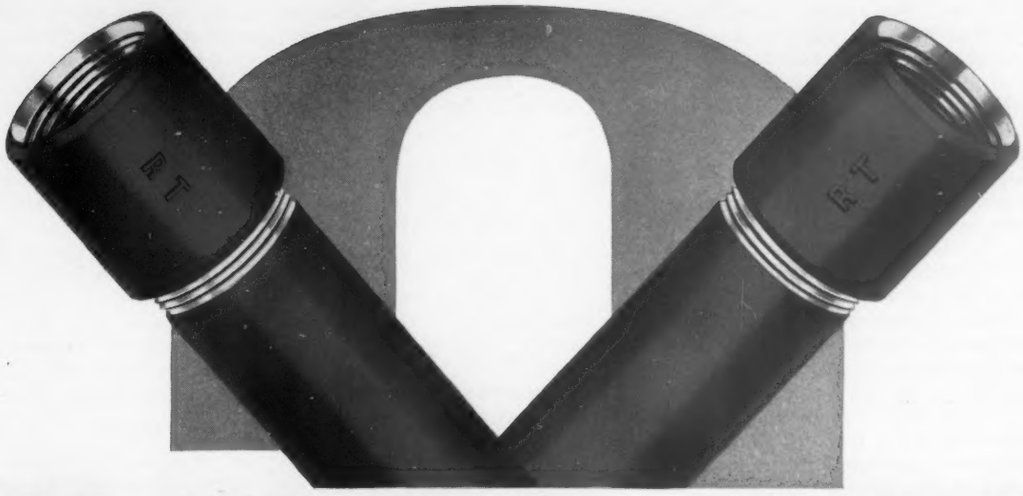
Speed in Welding 18-8

In welding thin sections of 18-8 stainless steel, it is necessary to weld as rapidly as possible to shorten the length of time that the puddle is exposed to the atmosphere. The main protection from oxidation is the oxy-

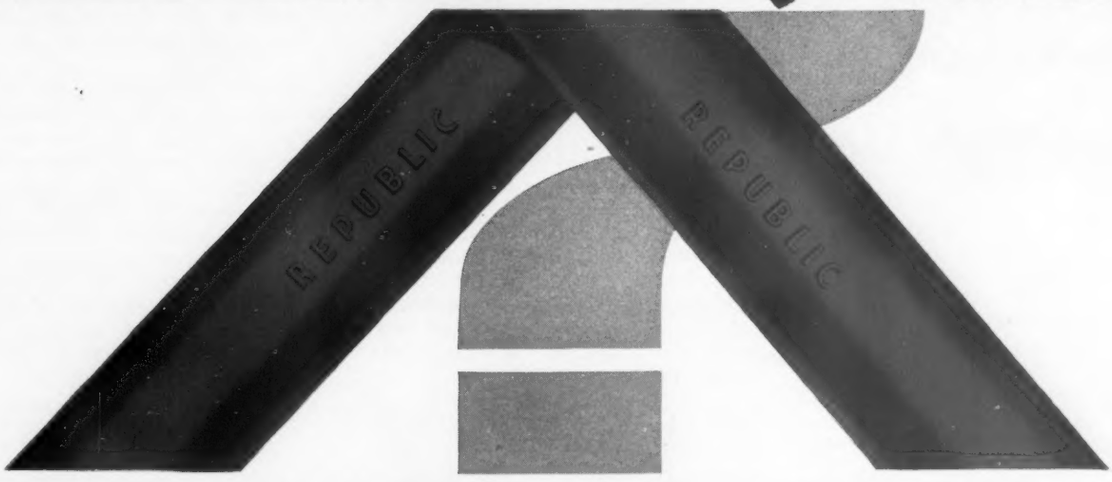
acetylene flame. By using a neutral flame, keeping the rod always at the top of the welding cone and the flame always playing on the weld and pointed slightly ahead in the direction of the weld, and by refraining from puddling, a suitably dense weld can be obtained.

$ $ $

Investigating excessive wear on gear teeth of an enclosed speed reducer, a plant found abrasive dust was present. This dust was introduced when an inspection hole cover



THERE CAN BE NO QUESTION



TONCAN IRON PIPE DOES LAST LONGER

Records of the service given by Toncan Iron Pipe in every type of installation prove conclusively that this modern alloy pipe does last longer. This statement holds true whether it is used in a plumbing or heating system in a building, in process lines in industrial plants, for supply and drainage lines on board ship, or carrying acid mine water far underground.

In the latest edition of "Pipe for Permanence" you will find the records of many comparative tests. And you will also find the technical information that explains why Toncan Iron Pipe consistently renders better service than other ferrous pipe slightly lower in cost.

Toncan Iron Pipe is the only pipe obtainable today that takes advantage of the properties of refined iron, copper and molybdenum to form an alloy that is rust-resisting to a higher degree than any other ferrous material, except the stainless alloys. It is the only pipe that combines with this rust-resisting feature the many advantages that Republic's Electric Weld Process alone can claim—100% perfect weld, straightness, roundness, uniform wall thickness, freedom from inside defects and absence of scale inside and out.

Every pipe buyer should know the facts. A copy of "Pipe for Permanence" will be sent on request.

REG. U.S. PAT. OFF.
TONCAN
COPPER
MO-LYB-DEN-UM
IRON PIPE

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO

in the gear case was removed, permitting accumulations around the edge to enter. Replacement of the cover by a plug and pipe nipple eliminated this trouble.

$ $ $

A common source of trouble for the porcelain enameler is an oxyacetylene weld produced with an oxidizing flame. Such a weld develops small bubbles or blisters when porcelain is applied. A reducing or carburizing flame increases the carbon in the weld metal and again the same condition as mentioned occurs.

$ $ $

A report was issued recently showing the degree of improvement which can be made in cast iron by carefully regulated preheating prior to casting in the ordinary manner. This varies with the composition; a common iron easily can be increased 25 per cent in strength in transverse bending, hardness and density, by preheating to approximately 1650 to 1700 degrees Cent.

$ $ $

Use of stainless steel in the manufacture of casting patterns used in localities where damp weather frequently prevails has been found successful in eliminating corrosion and sand adhesion.

$ $ $

A manufacturer of cold-rolled strip steel has been experimenting with a special analysis strip for use as a bullet-proof guard to police car tires and other vulnerable parts. The strip is being developed in perforated form.

Brilliantly Luminous Service Station Makes Wide Use of Steel and Glass

A NEW type of service station is soon to make its appearance in southern California. Made entirely of steel and glass, it will present striking colors during the day, and by illumination will be made spectacularly brilliant at night. Both the construction and exceptional lighting effects are representative of the most advanced trends in commercial building design.

The pillars, girders, walls and canopies all are made of a specially fabricated steel, which can be furnished in a fine smooth porcelain enamel in any desired color.

The spectacular lighting effects are achieved by some very original concepts in the art of illumination. A series of illumined glass tubing, supported by steel framework, run the full length under the sides of the canopies. The decorative quarter arc, topping the structure, is enhanced with letters and tubing in colored lights which appear on three sides. Concealed search lights throw luminous beams in the air, making the structure outstanding, from a considerable distance. Bright interior lights, casting their brilliance through large window areas, contribute further to the desired illuminating effect.

A number of specific advantages accrue to this structure. First, its advanced design plus the original and unusual lighting effects, greatly enhance its position from the standpoint of competition.

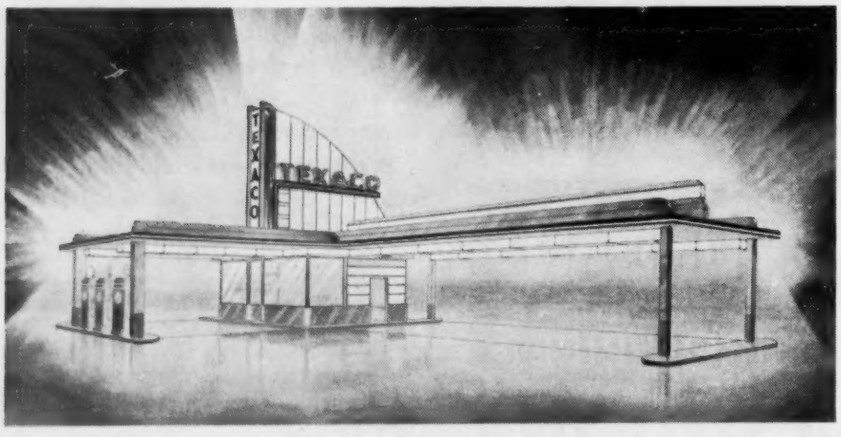
Second, this structure lends itself readily to standardization, with the result that many economies can be effected where there is any volume of building.

Third, a steel building such as this, is simply bolted together, and can be easily taken apart. This factor greatly reduces the hazard of selecting a poor location. Under the circumstances, the operator can afford to take a short lease on the land, and if it is found afterwards that the location is unprofitable, the building can be taken down and moved to another site with very little expense. The only loss incurred, from the construction point of view, would be for the concrete runways.

Building Can Be Moved

Because of this latter fact, buildings fabricated of glass and steel and illuminated such as these offer considerable opportunity for the "Drive in" type of restaurant. Since the structure is not rooted to its site, the operator can frequently obtain on short term leases some very valuable locations, which would otherwise not be possible to this business. Later, whenever the necessity to move arises, the building can be taken apart and moved, as previously explained.

This use of enameled porcelain steel and glass in conjunction with spectacular exterior lighting, also has unlimited possibilities for the modernization of store fronts and all other business dealing directly with the consumer. Aggressive retailers, anxious to blaze new trails and remain ahead of competitors, already are beginning to take advantage of it.



Porcelain enameled steel and glass construction and special illumination will make this new type of service station spectacular both day and night

Bell-Type Electric Furnaces Used To Anneal Strip

Use of electric furnaces for annealing high and low carbon strip steel from 1 to 6 inches wide has been found to have a number of advantages in the plant of the Thompson Wire Co., Mattapan, Mass., according to a discussion by P. N. Rugg, Boston Edison Co., in *Electrical World* for April 7. The company now has four bell-type electric furnaces for this work equipment with each furnace including bell-type furnace proper, five car bases, five protective hoods, furnace guides, car rails, automatic temperature controls and contactors. Artificial atmosphere is obtained by means of either a 10-kilowatt city gas purifier or ammonia dissociator, both these devices being installed.

Advantages include: Minimum of dead weight material to heat in the furnace, resulting in shorter annealing cycle; furnace size such that large or small orders can be annealed readily and efficiently; each charge uniformly annealed, due to close temperature control of cycle,

giving better annealed and better looking product; cleaner, cooler and quieter working conditions, with no chips, scale, borings, heavy pots or products of combustion; and lower overall annealing costs.

Swimming Pool Built in Arc Welded Greenhouse-Type Structure

TO AFFORD all year around facilities for swimming in localities where temperatures limit the sport to only a few months outdoors, indoor pools are necessary. Structures built along the lines of greenhouses answer this need satisfactorily and economically and at the same time offer splendid possibilities for steel and welding.

The accompanying illustrations show a pool of this type built recently in Troy, O. This structure includes under a flat roof at one end, two dressing rooms and a boiler room sufficiently large to be used as a garage. It was erected on the grounds of the home of E. A. Hobart, associated with Hobart Bros. Co., with the complete design and structural welding detail worked out in the engineering department of this company.

Side walls are a frame of lightweight 4-inch channels, spaced approximately 2 feet apart, covered with steel lath welded in place, both inside and outside. This lath serves as a base for stucco on the outside and stucco or plaster on the inside. Window frames are fabricated of steel welded together and glazed with ribbed glass.

The arched roof construction of arc welded steel is built in the factory. The pleasing appearance of a greenhouse is obtained by curving the edges of the roof, rather than by using straight angles; this curve is obtained easily by rolling curved pieces and welding them together. Sections of steel 2 inches x ½-inch were rolled cold in this way and welded so as to form a piece ½-inch x 4 inches thick. The arched work then is made up of 2 x ½-inch steel and with the proper bracing a light-weight and yet strong arch is fabricated. Standard practice is to make the pitch of the roof 32 degrees.

Each roof section has a ventilator at the top, consisting of a welded steel window, four panes wide. The sash opening device, extending the full length of the building and operating all the ventilating windows at one time, is built up of welded steel parts. Gutters for the roof are made of 4 x 4-inch steel angles with 3 x ¼-inch strip welded to one side. This type of gutter is sufficiently thick that it will not rust out quickly.

Water from the gutters is led through downspouts to the sewer as is also the water from the swimming pool outlet and showers. The pipes for the drainage system consisted of 5-inch diameter boiler tubes, welded.

For underwater lighting, twelve lights were built into the sides of the pool; these lights were made of 8-inch steel pipe, with flanges welded on the front end and plates on the back ends.

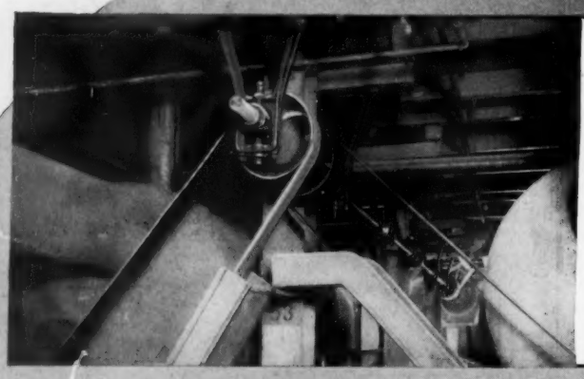
Other parts of the equipment built with arc welding are the 6-foot diving platform and stairs leading up to it, all constructed of steel pipe. Likewise, the ladder from the bottom of the pool to the floor level is of welded pipe construction.

At the end of the swimming pool is a flat-roofed building which houses the dressing rooms and heating plant. The side wall construction of this building is similar to that of the pool building, although the roof is of flat steel sheets instead of glass. These sheets are formed in the shape of a Z with two sections of the sheet horizontal and one vertical when bent. The vertical sections act as rafters to give strength to the flat roof and when these Z shapes are welded together, they form a cellular or box-type of construction, strong and of light weight. This roof is covered with roofing paper and pitch.

Welding equipment employed in the fabrication of this structure was built by Hobart Bros. Co., Troy.

TYPICAL greenhouse construction is employed in the arc welded steel framework for this recently built swimming pool. Above, an operator is shown welding some of the structural members in the roof. Note steam pipes in the interior view at the right, for maintaining comfortable temperatures during the winter months

One *sure* way *to lower* OVERHEAD!



Results of two power consumption tests at Columbus, Ga.

131 Fafnir Ball Bearing Hanger Boxes installed *after* the March test and *before* the December test.

	Reading in KW Mar. 1932	Reading in KW Dec. 1932
20 HP, AC, Wood Shop Motor	6.40	2.20
30 HP, AC, Pattern Shop Motor	8.00	4.20
7½ HP, AC, Core Shop Motor	3.36	1.00
15 HP, AC, Casting Shop Motor	5.20	2.40
30 HP, DC, Casting Shop Motor	8.25	3.66
50 HP, DC, Machine Shop Motor	16.45	13.72
25 HP, DC, Pattern Shop Elevator	3.68	1.95
TOTAL . . .	51.34 KW	29.13 KW

Many manufacturers, confronted with the problem of lower overhead, have found substantial savings in power transmission. They have found numerous plain bearings wasting power, eating up potential profits. They banished this waste and turned a loss into profit.

Glance at the comparison of a typical before-and-after shown on this page. The total horsepower involved is relatively small, but the percentage of saving is appreciable. 22.21 K. W. saved, or better than 76% of the actual power requirements, when Fafnir Ball Bearing Lineshaft Boxes had banished the waste. Multiply in proportion to your horsepower requirements and you can gain a picture of potential profits—easily obtainable.

Savings did not cease with these power economies. Semi-annual greasings replaced weekly oilings. Lubricant was saved and maintenance expenses were greatly reduced.

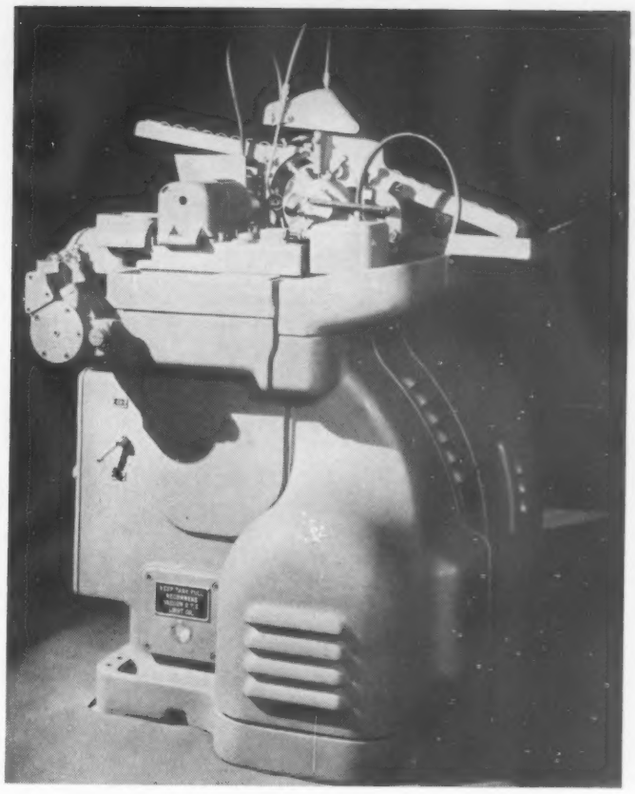
If you transmit power it will pay you to investigate the possibilities of Fafnir Ball Bearings and Fafnir Transmission Equipment. We will gladly cooperate and you can be sure of getting immediate service. There's a distributor nearby who carries these units in stock. THE FAFNIR BEARING COMPANY, *New Britain, Conn.* Atlanta . . Chicago . . Cleveland . . Dallas . . Detroit . . Milwaukee . . Minneapolis . . New York . . Philadelphia.

Read "THE DRAGON"

FACTS *such as these in all types of applications are given in "The Dragon". If you're not receiving a copy regularly, please let us know.*

FAFNIR BALL BEARINGS

Development of Novel Machine Involved Careful Choice of Materials and Parts



This new type automatic, internal, centerless grinding machine, aside from embodying a new principle of grinding, is noteworthy in the selection of materials for its construction

IN DESIGNING its recently introduced automatic type of internal, centerless grinding machine, the Heald Machine Co., Worcester, Mass., devoted unusual care to the selection of materials, parts and supplies used in its construction and operation. This attention was necessary in view of the fact that the machine was developed primarily for grinding work having finished cylindrical outer surfaces and where the bore must be held to exceptionally close tolerances.

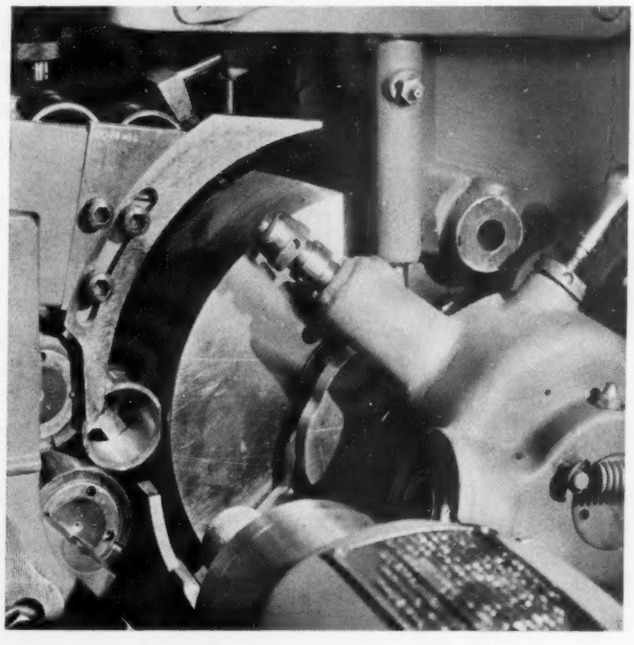
The machine, which was described on pages 24 and 40 of the February 26, 1934, issue of STEEL, involves the application of a wider variety of materials than is found in machine tools of conventional design. Also, alloy steels and irons are used more extensively.

As shown in the illustrations at the bottom of this page, the key parts of the machine are three rolls, known respectively as the regulating, pressure and supporting rolls. All work pieces are engaged by these three rolls; therefore these rolls must be the most durable parts of the machine. They are made of steel containing 0.85 to 0.95 per cent carbon, 1.05 to 1.25 manganese, 0.25 silicon, 0.45 to 0.55 chromium and 0.45 to 0.55 tungsten. These rolls are hand-finished and case-hardened to 60-62 Rockwell C.

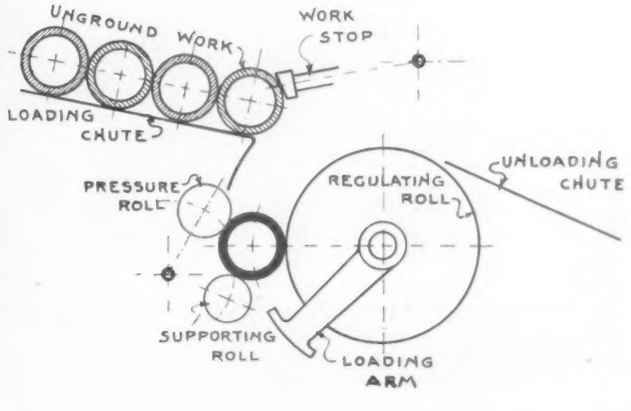
About 95 per cent of the working parts of the machine are of Hy-Ten B-3 steel furnished by the Union Drawn Steel Co., Massillon, O., through its Hartford, Conn., office. This steel analysis is 0.45 to 0.55 per cent carbon, 1 to 1.20 manganese, 0.045 sulphur, 0.040 phosphorus and 0.50 to 0.60 chromium. Parts made of this steel are heat treated before and after machining.

Castings of Z-metal, furnished by the Arcade Malleable Iron Co., Worcester, Mass., are used in various parts, including the loading arm which feeds the work pieces into the machine and which must resist continuous wear, the cams which constitute parts of the loading system, and the hydraulic system. This metal, as used in the Heald machine, contains molybdenum and chromium. The Z-metal castings are electrically annealed and air quenched at the foundry and emerge from this treatment with a 185 brinell surface hardness. Z-metal has an ultimate strength of 80,000 pounds per square inch and has definite corrosion resistant value. After machining, the only additional heat treatment is of the tips of the loading arm.

While, as stated previously, 95 per



Close-up view and diagram showing work-holding parts



cent of the working parts are of special rolled steel, castings constitute most of the weight of the machine. The base is a 30 per cent semisteel casting, made with close ribbing in order to minimize vibration. The ways are hand-scraped to master plates. Table dogs are gray iron or Z-metal castings. The brackets carrying the supporting and pressure rolls, the loading chute, the reciprocating table which is part of the hydraulic system for operating the grinding spindle and the bridge on which the wheelhead is mounted are gray iron castings.

Gages and the work guide are of Hy-Ten B-3 steel faced with tungsten carbide. Most of the guards which protect moving parts of this machine are of aluminum which recently has been used more widely for this part.

Bearings Are Matched

Matched bearings, either ball or roller, are used throughout. No welded construction was employed in this machine, the various parts being held together by bolts and nuts with N. F. thread. Where screws are used the Allen socket head cap type are employed.

The grinding control is oil-hydraulic. Pressure is provided by a rotary gear pump drawing oil from a 15-gallon tank which is an integral part of the base. In the hydraulic system a reversing valve operates the reciprocating table and a reducing valve maintains a low working pressure at the feed valve irrespective of the changes in the high pressure line. The hydraulic system also embraces the lubricating system, so that selection of the oil was made with both applications in mind. The oil used in D.T.E., heavy medium, made by the Socony-Vacuum Corp. The main drive which actuates the loading arm, discharge arm, wheel head, water pump and rotary oil pump is a 5-horsepower, 1800 revolutions per minute electric motor, mounted on the rear of the base, close to the floor to minimize vibration. No gears or chains are employed in the drive, multiple V-belts or flexible couplings being used throughout. The work-driving unit is a ¼-horsepower electric motor.

Water, pumped from a 30-gallon tank is used as the medium for cooling. Filters are used both in the oil and water systems. A novel feature of the oil and cooling systems is the use of brass piping with leaded threads to prevent leakage. The machine is finished in gray lacquer, sprayed on.

New Machines Speed Welding of Rims

A NEW line of high speed, overhung, rim welders has been developed by the Federal Machine & Welder Co., Warren, O., which differ radically from the standard type of rim welder which has been in use during the past ten years. The new machines are capable of welding 500 rims or more per hour of the standard passenger car sizes.

The operation of the new machines is so interlocked that the operator merely places the rim on the two overhanging arms, presses a button, the machine clamps and after clamping properly automatically starts through the welding cycle, completes the welding, ejects the rim without further attention from the operator, and returns to the starting position.

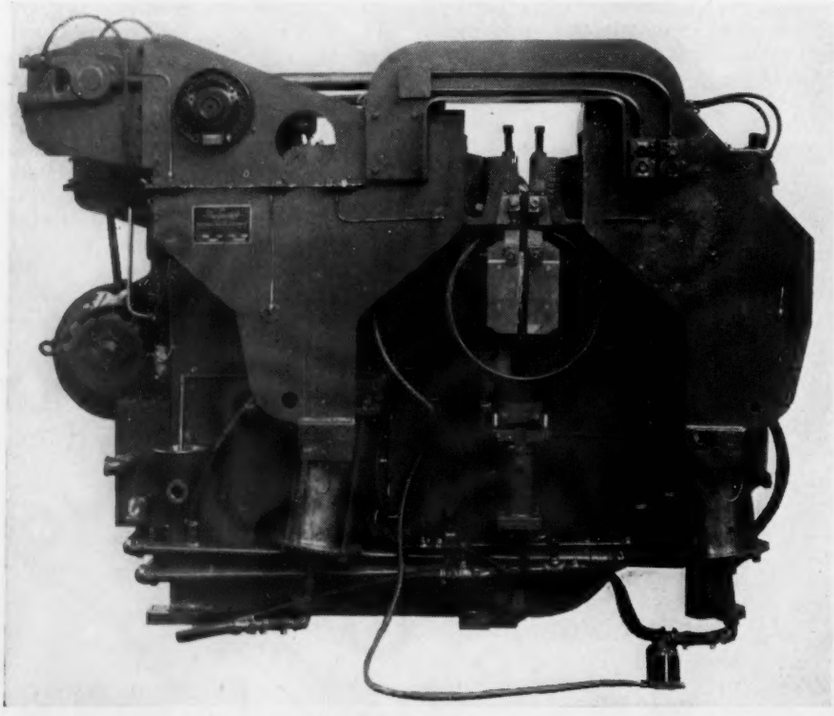
Die Supports of New Type

The overhung die supports represent a radical departure from the design of standard equipment. Instead of clamping arms which clamp on the inside of the rim, on the new equipment the rims are hung over two protruding arms allowing the clamps to clamp on the outside of the rim, or on the tire side. This innovation has the advantage of higher production, easier loading conditions, and improved product.

The movable side of the welder pivots about a shaft rather than moving on hardened steel ways. This improvement eliminates the possibility of the flash getting into the equipment and wearing the slides. The movable side is adjustable through an eccentric shaft which allows the die to be raised or lowered quickly for alignment or for wear.

The new machines are equipped with a rim ejector which automatically unloads the rim after it has been welded and allows the operator to pick up the next rim. In the old equipment, a second man was required for unloading the rims.

The new welders also have a high potential transformer which reduces the voltage directly from the high line voltage to the welder voltage, thus eliminating the cost of step-down transformers. The transformer can be removed without touching any of the other equipment.



New overhung automatic rim welder, capable of handling 500 rims per hour. An automatic ejector helps to speed up the operating cycle

Revised Roller Bearing Data Include Larger Sizes

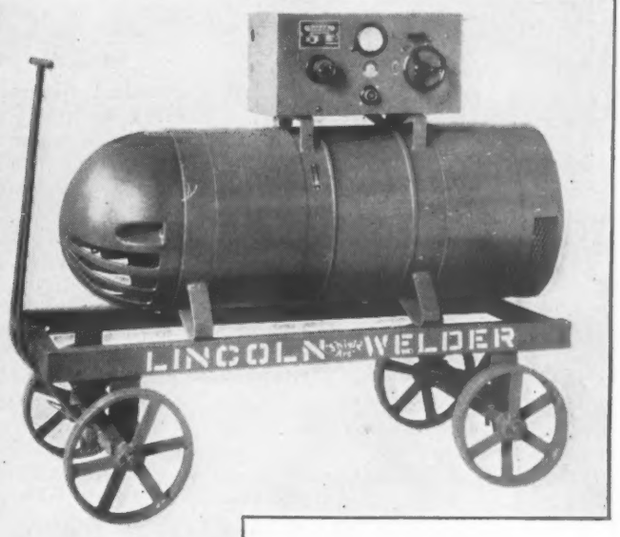
Copies of revised simplified practice recommendation, R67-33, covering taper roller bearings, are now available, and can be obtained from the superintendent of documents, government printing office, Washington, for 5 cents each, according to recent announcement of the National Bureau of Standards.

This recommendation originally was formulated by the industry in 1927. The current revision not only brings the program into accord with the Society of Automotive Engineers' revised standard but extends the scope of the original recommendation to include larger bearings together with certain steep angle bearings for naval and general use.

"These welder salesmen have me confused with their claims."

"Compare their machines with the Lincoln 'Shield-Arc'—then you'll have the salesmen confused. The 'Shield-Arc' sells itself."

HERE'S WHAT YOU NEED IN A WELDER



For faster welding—for better welds—for lowest welding costs

Time and again competitive tests have proven that only the Lincoln *"Shield-Arc"* has what it takes to produce the highest quality welds at a speed which drives production costs down to a new low . . . no matter whether you figure the cost per lineal foot of weld, or per pound of weld metal or per hour of welding. That's why there are more Lincoln welders in use today than any other make of welding generator.

The higher speeds, the better welds and lower cost of welding with the *"Shield-Arc"* have made it economical for many welder users to scrap their old type machines for *"Shield-Arc."* The savings made by the *"Shield-Arc"* generally pay for this new welder in only a few months of operation.

Arc welding is saving industry millions of dollars annually. Be sure you are getting all the savings arc welding can give you. Find out now how much more Lincoln can save you with a *"Shield-Arc"* welder.

LINCOLN

TO BE MODERN . . . A WELDER MUST HAVE THESE FEATURES

1. Uniform Current
2. High K. W. Capacity
3. Sparkless Commutation
4. High Efficiency
5. Remote Control (without portable accessories)
6. Polarity Switch
7. Center Reading Meter
8. Dual Control
9. Laminated Magnetic Circuit
10. "Handy Height" Controls
11. Drip Proof, Welded Steel Construction

"SHIELD-ARC" has them all

W-73

THE LINCOLN ELECTRIC COMPANY, *Largest Manufacturers of Arc Welding Equipment in the World,* **CLEVELAND, OHIO**

"SHIELD-ARC" WELDERS AND ELECTRODES

PROGRESS IN STEELMAKING

PHYSICAL properties of rolled steel are improved from 10 to 20 per cent without heat treatment by the addition of 1.50 per cent copper; the properties are improved another 10 to 15 per cent with heat treatment.

♦ ♦ ♦

Transforming a coal-fired sheet furnace into a gas-fired pair furnace at a sheet mill in the Mahoning valley has effected a large saving in the fuel consumption. Insulation was used on the walls. An average of 4.2 tons of steel is heated an hour. Approximately 1007 cubic feet of 1100 B.t.u. gas is required to bring 1 ton of sheet bars to the rolling temperature compared with 1850 cubic feet when the bars are heated in an adjoining furnace.

♦ ♦ ♦

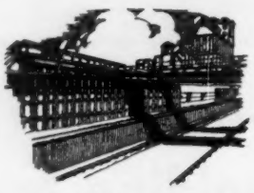
Light-gage metal mounted on plywood panels and providing a bright or satin finish for display purposes now is being fabricated by an Illinois company in the form of flat, fluted, crimped or striped sheets; angles; and moldings.

♦ ♦ ♦

Coating wire rods and wire with lime by the hot process is inferior to the cold process in imparting a smooth finish, particularly to the finer sizes, according to an English authority. The lime attaches itself loosely to the oxide coating and wears more rapidly during the draw resulting in less depth of reduction.

♦ ♦ ♦

Highly resistant to conditions and materials at the tuyere zone in adverse and normal operations is a new blast furnace tuyere built with a refractory nose. The refractory is chemical neutral to slag and contains no reducible metallic oxides. It resists materials and conditions in the hearth and bosh zones of the stack and remains in place to function as a protection to the tuyere. The cooling medium preserves its original length and nose profile on account of the heavy walls. The third or middle wall assists in retaining the refractory and protecting it against mechanical damage. The interior of the water chamber is streamlined so that there are no congested spaces to retard circulation and no spaces for air and steam to become bound.



SELF-SEALING doors for by-product coke ovens, which are claimed to reduce the wear on the refractory lining and closing mechanism, have been devised in England. Open and closing is accomplished by two locking bars at the top and bottom, these revolving on spindles and being linked together by a chain to facilitate operation from the platform. The bars fit into wedge-shaped guides on the cast-iron door frame, thus holding the door against the frame. A series of buffer springs is provided to absorb the shock when closing the door, or it is equipped with arch springs at the rear of the jointing ring. By this arrangement no surfaces are swept by gas which presents cooling points and causes tar deposits.

♦ ♦ ♦

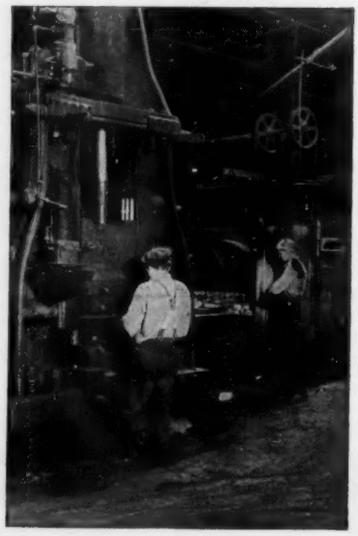
Efficient operation of cold rolls of chilled iron containing from 3 to 5 per cent nickel and from 0.5 to 1.5 per cent chromium has been obtained in the sheet and tin mills of a Japanese plant. The ordinary chilled iron rolls previously employed had to be redressed in a lathe after a campaign of six days amounting to 36 hours of continuous operation. The cast iron rolls containing the nickel-chromium combination, however, were used without redressing for 50 days of 20 hours of continuous operation each, or a total of 100 hours.

♦ ♦ ♦

With equal heat flow at thermal equilibrium and a furnace temperature of 2800 degrees Fahr., an insulated firebrick wall has a thermal capacity of 8750 B.t.u. per square foot, whereas a heavy wall backed up with insulation has 91,500 B.t.u. per square foot or ratio of about 1:10, according to comparison tests.

♦ ♦ ♦

Important factors which contribute to the formation of spangles on steel sheets, as cited by an authority on galvanizing practice, include the presence of cadmium and tin, the release of latent heat of the coated metal, the number of points at which crystallization of the zinc begins, surface condition of the base metal and the property of the base metal to absorb gas from the pickling bath.



Super-Refractory Insulation Alters Furnace Design

BY E. C. LLOYD

INSULATING brick with a maximum temperature of 1600 degrees Fahr. were introduced into this country from Europe more than 20 years ago. By 1924, it was possible to secure an insulating brick which could be subjected to temperatures as high as 2500 degrees Fahr. Brick specially designed for direct exposure to the furnace atmosphere have been available commercially for about three years and have shown great potentialities.

Superinsulating brick placed inside a steel encased furnace structure braced with steel shapes give a better overall performance than the old massive masonry construction. The heat flow through the 9-inch superinsulating brick wall is about the same as the flow through the conventional wall of 13½ inches of firebrick and 4½ inches of insulating brick. The heat capacity is reduced to one-sixth to one-tenth of the heat capacity of the wall formerly used. Consequently there is a much reduced absorption of fuel by the furnace itself, as well as a reduction in the time of heating and cooling which in many cases has proved highly advantageous. The reduction in wall thickness materially cuts the space occupied by a furnace of the same inside capacity. Quicker heating, more uniform temperature, and greater responsiveness to change in firing conditions or desired furnace temperature, give a greater capacity for a furnace of a given size than in a furnace with the conventional wall construction.

Brick Reflects Heat

The greater responsiveness of the furnace built throughout of superinsulating brick is the natural result of the reduced heat absorption and the time factor in the flow of heat into the wall of low heat conductivity. In fact, one of the important advantages to be gained with the use of superinsulating brick is the quick reflected heat made possible through its use.

However, this brick is not a universal material for use in any type of furnace. Generally speaking, for continuous operation of heat treating equipment, heating furnaces, or boilers or kilns, a combination of firebrick with insulating brick as backing still is recommended since heat storage in such furnaces is desirable. For the furnace where quick reaction to temperature change is desired and where the furnace is to be intermittently operated, the low heat capacity of the superinsulating brick is advantageous and proves its value in the performance of the equipment.

An idea of the results that can be expected from the superinsulating brick is had by comparing the weight, heat flow and heat capacity of a 9-inch wall of superinsulating brick, a 13½-inch wall of No. 1 firebrick and a 13½-inch wall of No. 1 firebrick backed up with 4½ inches of a 1600-degree insulating brick.

The comparative weights of these three walls are, respectively, 33, 169, and 180½ pounds per square foot. When operating as a part of a 2200-degree furnace, the heat flow through the 13½-inch firebrick wall is nearly 2½ times that through the superinsulating brick wall of only two-thirds its thickness. The heat flow through the combination firebrick and insulating brick wall is about 85 per cent of the heat flow through the 9-inch superinsulating brick wall.

Thick Wall Takes More Fuel

With a furnace temperature of 2200 degrees Fahr. the 13½-inch firebrick wall alone will hold nearly 5½ times as much heat as will the 9-inch superinsulating brick wall. That is, it will require 5½ times as much fuel to bring it up to temperature. The insulated firebrick wall will, by reason of its higher average temperature, require nearly 9 times the fuel to bring it to the equilibrium point. Naturally, the time of heating is not far from the direct proportion to the quantity of fuel required.

The use of the flat arch is made possible by the light weight, high crushing strength, and high insulating value of the superinsulating brick. On certain furnaces the flat arch has given an excellent account of itself in that it has enabled the builder to place the arch closer to the ware and thus secure a direct reflection of heat from the entire arch to the entire hearth area.

Another interesting point in furnace construction has been the utilization of lag screws for attaching the superinsulating brick to the steel shell of the furnace. A hole of correct size for the screw is drilled through the shell. A hole slightly smaller than the screw is drilled in the brick. The lag screw then is introduced and pulled up tight so that it cuts its own thread in superinsulating brick. It then is backed out, dipped in silicate of soda and retightened. The small amount of silica gives an excellent bond to the brick material and the result is a thoroughly satisfactory tie to the steel shell.

One type of superinsulating brick has a weight of 2¾ pounds for a 9 x 4½ x 2½-inch straight or approximately 47 pounds to the cubic foot. In composition, this light-weight superinsulating brick is an aluminous silicate being made from a kaolin base in a continuous tunnel kiln. It has been used successfully in furnaces operating at temperatures as high as 2550 degrees but this temperature is slightly over the maximum at which it is suggested for use. A slight surface shrinkage may appear at this temperature even though the surface is protected with a high temperature facing cement applied in two brush coats or sprayed thin on the surface. The maximum temperature for which the brick is recommended is 2475 degrees Fahr; its fusion point is 3092 degrees Fahr. by pyrometric cone equipment.

Details of Sheet Mill Furnace

One of the furnaces on which the comparison is based, is a sheet mill pair furnace, 12 feet 5 inches long x 6 feet 2 inches wide x 6 feet 10½ inches high inside. The wall is made up of 9-inch of superinsulating brick backed with 2 inches of a high-temperature block and finished on the inside with a high-temperature facing cement. The arch of this furnace is a sprung arch of 9 inches of superinsulating brick with an asphaltic sealing cement on top. The same coating cement used on the walls serves as an inside surface.

Results secured by this furnace were compared with the performance of two furnaces, each 22 x 8 x 8½ feet inside and built in battery, which have an 18-inch firebrick midwall and an outside wall of 13½ inches of firebrick with 4½ inches of 1600-degree insulating brick. They have a 9-inch firebrick sprung arch with two flatwise 2½-inch courses of 1600-degree insulating brick over the arch.

The furnace constructed of superinsulating brick, originally was designed for a capacity of 1.7 tons of sheet bar per hour. Actually, it will heat about 2½ tons of sheet bar per hour on the average and it has run on occasion at the rate of 4 tons per hour.

At the week end lighting the furnace requires only four hours to heat up as compared to eight to ten hours

---

Abstracted from a paper presented at the spring conference of the Association of Iron and Steel Electrical Engineers, Youngstown, O., April 11-12. The author, E. C. Lloyd, is associated with the Armstrong Cork & Insulation Co., Lancaster, Pa.

for the conventional type unit. On one occasion it was heated up in an emergency in two hours for both furnace and charge. At the time of shut down for repairs it is possible to have workmen in the new furnace in 12 hours as against three to four days required for the larger and older comparable firebrick furnaces.

The inside surface of the newer furnace keeps clean, thus obviating the necessity for chipping deposited oxide and carbon. On the older furnaces it is necessary to shut down and chip this deposited material off about once a month.

The old furnaces have a hearth 10 feet long and a hearth area of 176 square feet each, as compared with 77-square foot hearth area for the new superinsulating brick furnaces. The fuel requirement of the smaller furnace per ton of production in February was 48.8 per cent less than the two larger furnaces of conventional type. Over a five-month period the smaller furnace has shown a 46 per cent better utilization of fuel than the larger units.

When it is necessary to change the temperature of the new furnace, it has been found that furnace and charge respond to an increase or decrease in the amount of fuel in not more than 20 minutes as compared to approximately one hour on the older and larger furnaces.

Another furnace which has shown an interesting performance is a heat treating furnace, 4½ x 6 x 3 feet inside, which operates at a temperature of 1600 degree Fahr. The walls and arch were built of a 9-inch superinsulating brick, finished on the inside with two brushed coats of an air-setting, high-temperature facing cement. Comparison was made of this furnace with similar equipment built of the usual firebrick. The outstanding item of performance of the new furnace is that the cycle of operation was reduced from 5 hours to 3 hours, only one hour being required to heat to 1600 degrees as compared to two hours for the firebrick furnace and only one hour being consumed in cooling from 1600 degrees of 800 degrees as compared to two hours. Briefly the results obtained from the new furnace follow:

The heat capacity is 29.4 per cent of the old, the fuel required to heat to 1600 degrees is 45 per cent of the old, the fuel required to hold at 1600 degrees is 68 per cent of the old, and the operating cycle is 60 per cent of old.

Annealing Time Reduced to 72 Hours in Electric Malleablizing Furnace

A SHORT cycle malleablizing furnace which reduces the total time for heat treatment from the conventional six, eight or ten day period, to 72 hours or less, is announced by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Elimination of decarburized surfaces, hard skin or hard spots on the surface, picture frame structures, burned or scaled castings, is done by malleablizing based on the chemical analysis of the cast iron in an electrically heated furnace having automatically controlled atmosphere.

The heating up of the charge is done at night, during off-peak load, with only radiation losses supplied during the day. Furnaces range from ½ to 25 tons, with maximum night time electrical loads of 40 to 600 kilowatts, and corresponding electrical capacities of 13 to 75 kilowatts during the daytime. Energy consumption for the 72-hour malleablizing cycle per gross ton of charge (castings and boxes when required) is:

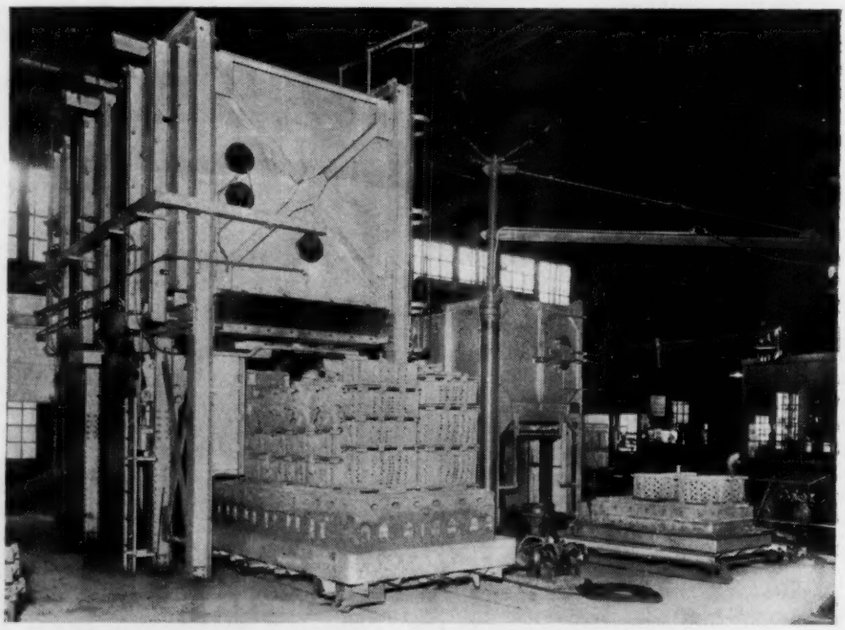
Size of furnace tons capacity	Kilowatt-hours per gross ton
25	375
12	450
7½	500
1	625
½	775

Since a definite time-temperature cycle is laid out, depending on the chemical analysis of the iron, every casting must be of the highest quality as to tensile strength, elongation, and machinability, for the particular analysis. Any modern plant having average melting supervision and analysis control may employ succesfully this 72-hour annealing cycle. Twenty-six hour cycles have been obtained by companies having these furnaces in operation on castings ½-inch thick and where the analysis is carefully controlled.

Packing materials and heavy cast iron pots are not required. Some castings may have to be annealed in boxes, but without the use of packing material. These include castings that will not withstand much weight without danger of warpage, or small castings that cannot be stacked up on the car in sufficient quantity to produce a full charge. Boxes made of ½-inch sheet steel have been in commercial use for 240 heats without signs of scaling.

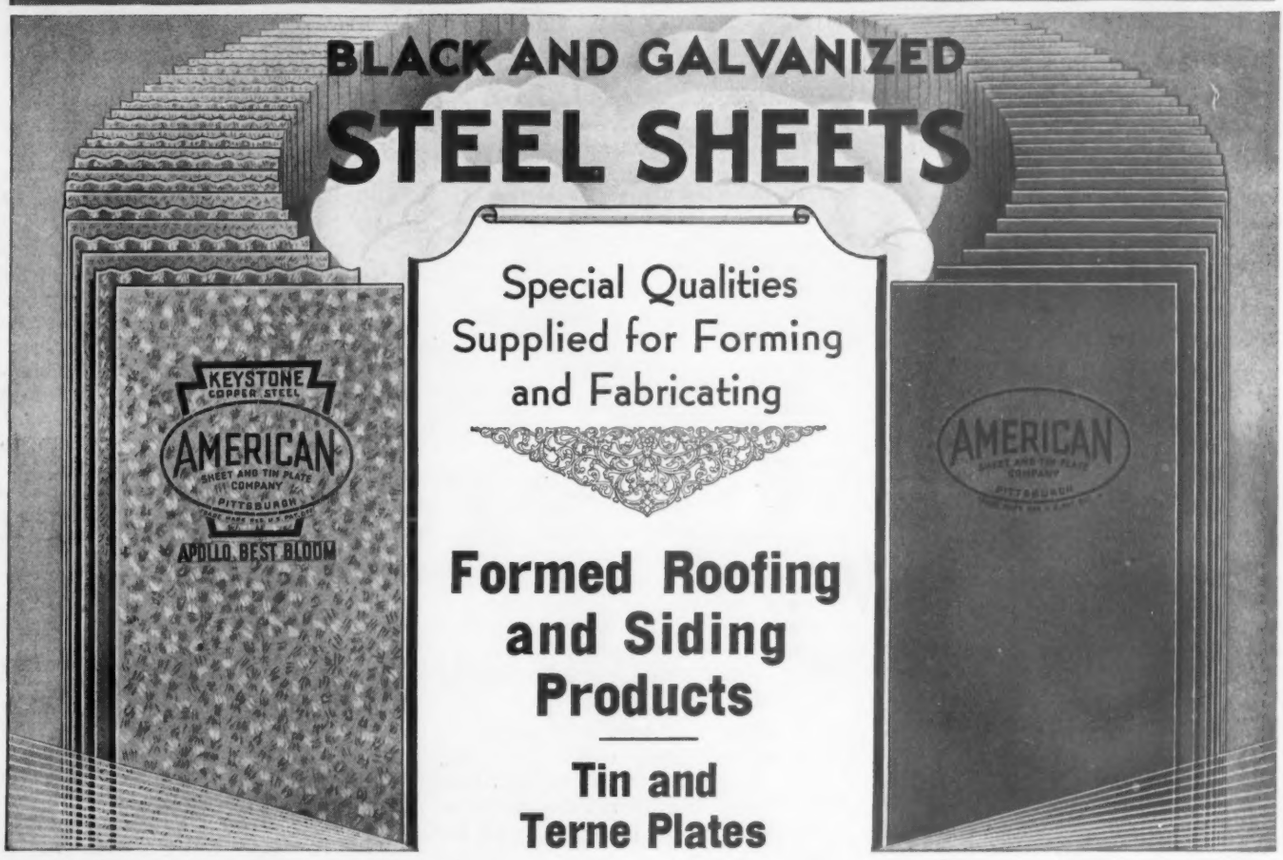
Buys Patents for Electrode Coatings and Methods

E. D. Bransome, Rumsen, N. J., has purchased all electrode coating patents and methods therefor from the Electric Arc Cutting & Welding Co., Newark, N. J., and C. J. Holslag of that company. Mr. Bransome will grant licenses to J. Adams Mfg. Co., American Chain Co., American Steel & Wire Co., Bethlehem Steel Co., Indiana Steel & Wire Co., Keystone Steel & Wire Co., Lincoln Electric Co., Pittsburgh Steel Co., Una Welding Inc. and Wilson Welder & Metals Co. Inc.



Short cycle electric malleablizing furnace by which the annealing time is reduced to 72 hours or less

AMERICAN



One fund of experience and technical resource gives to all AMERICAN products the credentials of authentic worth. They have a reputation for reliability and merit.

In fields of industry, transportation and construction, and in lines of remanufacture and fabrication — AMERICAN Sheets are a distinct asset to better business.

These products are well made in every particular, with close adherence to recognized quality standards — the kind that pleases both in the shop and in exacting service.

KEYSTONE quality (alloyed with copper) offers maximum resistance to corrosion. Sold by leading metal merchants. Write nearest District Sales Office for full information and literature.

AMERICAN SHEET and TIN PLATE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

DISTRICT SALES OFFICES:

CHICAGO, ILL. - The 208 So. La Salle Street Building
CINCINNATI, OHIO - - - Union Trust Building
DENVER, COLO. - - First National Bank Building
DETROIT, MICH. - - General Motors Building
HOUSTON, TEX. - - Petroleum Building
NEW YORK, N. Y. - - - 71 Broadway
PHILADELPHIA, PA. - - - Widener Building
PITTSBURGH, PA. - - - - Frick Building
ST. LOUIS, MO. - Mississippi Valley Trust Building

Pacific Coast Distributors—Columbia Steel Company, San Francisco, California.
Export Distributors—United States Steel Products Company, New York, N. Y.

STEEL SHEETS for EVERY PURPOSE

—Photo courtesy Barrett-Cravens Co., Chicago

IT IS estimated that 1000 *tons of steel, chiefly bars and flats, are consumed annually in the manufacture of lift trucks. More than* 3000 *tons of steel goes yearly into the platforms used with the trucks*

LARGE USES OF STEEL IN SMALL WAYS

262nd Article ◆ Lift Trucks

DEVELOPMENTS in transportation agencies have done more to increase the consumption of steel during the past 50 years than has progress in any other single line of human endeavor. The railroads, automobiles, trucks, ships and airplanes are the prime movers for long hauls and constitute the leading customer of the steel industry, but the various secondary forms of transportation, principally for the movement of materials and products over short distances, have increased in number with the expansion in industry and also offer an important, even though relatively small, market for steel.

Elevators, cranes, conveyors and hand-operated trucks are typical of such equipment. The most widely used type of hand-operated truck in industry is the lift-truck, important feature of which is its ability to lift heavy loads from the floor, move them, and deposit them in place without the necessity of piecemeal loading and unloading from the truck. Applications of this equipment are many, the truck being adapted for use in practically any industry where heavy loads must be moved from one plant location to another. Since the lifting and lowering operations are accomplished without jarring, these trucks are particularly useful in moving fragile articles, such as glassware, terra cotta or cores for castings.

Lift trucks generally are used in combination with platforms or skids that permit the truck to be rolled underneath them. The truck handle serves as a lever to operate the mechanism which raises the platform and load from the floor as well as to pull or push the truck to its desired location. Production of lift-trucks recently has been at a rate to indicate an annual consumption of 1000 tons of various steel products in their manufacture, chiefly bars and flats. In the fabrication of platforms more than 3000 tons of steel is consumed yearly.

Castings, Forgings Also Used

Typical lift trucks are made almost exclusively of steel and principally from rolled products. The model illustrated has chilled cast-iron wheels, while a few parts are forgings. Made in various sizes to accommodate loads from 500 to 6000 pounds, the trucks range in weight from about 200 to nearly 600 pounds. Platforms measuring from 23 to 46 inches wide and from 24 to 84 inches long can be handled.

The truck consists of a lower frame to which the wheels and lifting mechanism are attached and a carrying frame that is raised by the operation of the handle much in the same manner as an automobile jack. The upper or carrying frame is formed of high-carbon steel bars, with cross-supports welded in place. A tubular, hydraulic check permits the carrying frame to be lowered slowly without further manipulation of the handle, while a spring hold-up prevents the handle from falling when not in use. Antifriction bearings in the wheels and on the kingbolt make for easy movement of the truck. Axles are chrome-nickel steel, while the handle is forged as also is the front link.

Platforms for carrying the loads handled by lift trucks are made of wood, steel or a combination of these materials and may be of the flat or box type. Steel platforms are pressed. The popular combination wood and steel type employs U-shaped legs formed of steel flats which are bolted, welded or both, to the steel angles to which the top-boards are affixed. These platforms are built to various dimensions, a common size requiring about 70 pounds of steel.

Introduces Unit Course in Machine Shop Technology

The National Metal Trades association announces the publication of "Machine Shop Technology," a unit course of instruction for students and apprentices engaged in acquiring knowledge and skill in the machinist and toolmaker trades.

The course has been developed by the association's committee on industrial education, assisted by more than a hundred practical shop men and a group of trade school instructors. It is suitable for use in company training programs or in public schools offering practical or related instruction in these trades.

The sections or parts of the course now ready are, the hand tool, engine lathe, milling machine, cylindrical grinding machine, shaper, turret lathe and an instructor's manual. There are 226 lesson units in the group amounting to more than a thousand pages with over 600 illustrations.

This material is available to the public, either in complete sets including the instructor's manual, or the sections may be obtained separately if desired. Prices and particulars will be furnished by the National Metal Trades association, 122 South Michigan avenue, Chicago.

Machine Tool Builders See Progress Made Under Code

PROBLEMS of economics, codes of fair competition, labor relations, methods of machine tool selling and machine tool exports, engaged the attention of members of the National Machine Tool Builders' association holding their thirty-second spring convention at the Edgewater Beach hotel, Chicago, May 24-25. Registration for the two-day meeting and a general meeting of the machine tool and forging machinery industry on May 23 totaled approximately 165, this being one of the largest attendances in the association's history.

The industry meeting, embracing both members and nonmembers of the association, was called for the purpose of discussing code administration and code provisions. Henry Buker, vice president and general manager, Brown & Sharpe Mfg. Co., Providence, R. I., chairman of the supervising agency, presented a brief resume of the agency's work.

Urge Co-operation on Code

General code provisions and registration of prices were discussed by Herman H. Lind, general manager of the Tool Builders' association and executive officer of the supervising agency. Both Mr. Buker and Mr. Lind asked for co-operation in complying with the industry's code. The latter pointed to the fine showing made by the industry in complying with code obligations, particularly as to hours and wages. He pointed to the fact that because the code was simplified as much as possible, there was a minimum of overlapping with other codes as regards definitions.

Report of the treasurer was made by Mrs. Frida F. Selbert, secretary of the National Machine Tool Builders' association. George H. Benzon Jr., vice president, William Sellers & Co. Inc., Philadelphia, and J. Herbert Abramson, works manager, Greenlee Bros. & Co., Rockford, Ill., submitted the report of the committee on costs.

An address on industry statistics, dealing with business in general and heavy and durable goods in particular, was presented by Ralph E. Flanders, president, Jones & Lamson Machine Co., Springfield, Vt. After a general review, he told how the association undertook in 1921 the compilation of pertinent statistics for the benefit of its members. Referring to requirements of the code authority for regular information as to men employed, hours worked, and wages paid, Mr. Flanders emphasized that frequent checkup, regardless of code authority, would be useful. This, he said, would give assurance as to whether management is giving its employes a fair deal in wage standards.

Mr. Flanders concluded by saying "There has been much talk of a planned economy. There can be no planning without information. We may well be suspicious of an economy planned for us by a super-authority or by government; but we should welcome the opportunity to plan each for ourselves on the basis of information common to all. Such planning will do more than assist the individual company; it will advance the interests of the entire industry, and play a part in the stabilization of business as a whole."

Activities of the durable goods committee were reported upon by Clifford F. Messinger, president, Chain Belt Co., Milwaukee, chairman of the board, Oliver Farm Equipment Co., Chicago, and a member of the committee. The report of this committee has been submitted to President Roosevelt but has not been released. Mr. Messinger paid a high compliment to the work of James W. Hook, president, Geometric Tool Co., New Haven, Conn., a member of the Tool Builders' association and a member of the durable goods committee.

The afternoon and evening of May 23 were given over to meetings of 20 competitive groups in the machine tool and forging machinery industry.

Commends Industry's Attitude

Presenting his report as president of the National Machine Tool Builders' association at the opening session on Thursday morning, Edward A. Muller, president and treasurer, King Machine Tool Co., Cincinnati, stated that there is manifestly a very sincere effort, especially on the part of the association's membership, to live up to the letter and spirit of the industrial recovery act in order to cooperate with the government in its laudable attempt to encourage business with the ultimate hope of increasing employment.

There are some statistics, he said, which indicate that there is in evidence an increased volume of business, although at the present time this does not apply to the machine tool industry. Various groups into which the industry is divided have been meeting frequently with the object of agreeing upon such details as are essential in a code of fair practice.

Mr. Muller was impressed with the fact that much ingenuity is resorted to to justify the placing of certain machines into a category in which the regular price does not apply and where certain reductions are considered desirable. However, he declared, if this same degree of ability were applied in the opposite direction, namely, to secure for the industry's products the fair prices to which it is entitled, it would seem that the future undoubtedly would be made more secure.

Referring to objectives of the founders of the association, its constitution and by-laws, Mr. Muller stated that they cover everything now made mandatory by NRA except its labor provisions and its restriction of hours. Had all industries been organized into as effective a trade association as the Tool Builders' association, there would be no need for all the provisions of NRA because in its code of ethics it has covered every essential in the conduct of permanent and successful business.

Calls for Aggressive Action

Stating that the inspiration for some of the features of NRA resulted largely from views of leaders of the American Federation of Labor, Mr. Muller said it is not unreasonable to assume that in its ambition to accomplish its objectives labor will resort to measures which are inimical not only to the best interests of all industry and its employes, but also contrary to the very spirit and purpose of NRA.

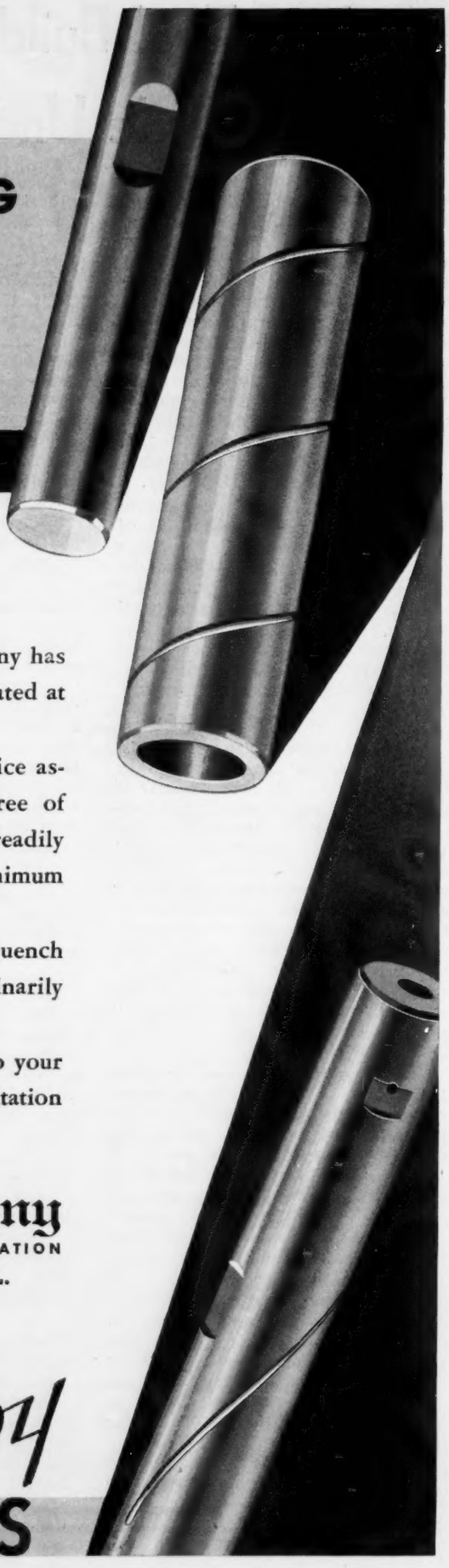
He continued "It is remarkable how submissive industry has been in the past, and it is high time that it becomes as articulate as the associations that wish to govern it, who have no investments whatever in industry. The time has come when industry must take its proper place in the framing of the policies of our government, as it has not had the slightest degree of effectiveness in the past in connection with the New Deal."

"The original theory that the depression would yield to a great improvement in the consumer goods industries has proved fallacious, and that the root of trouble was in the situation in which the durable goods were placed since 1929. Depressions after all result from greatly reduced volumes of business in the durable goods industries, and if attention had been given to these industries at the outset, no doubt much greater progress would be in evidence today. Some of the policies of the government, in the minds of many observers, are conflicting.

"The reduction of the gold content in the dollar, with the object of creating a demand for our products from foreign countries, and then following it by measures which are increasing the cost of our products to such an extent as to offset every advantage of the dollar in foreign markets, must

Lower YOUR TREATING COSTS *with this* SINGLE QUENCH CARBURIZING STEEL

ILLINOIS S·A·E·4615



FOR bearing races, piston pins, king pin bolts, or other applications where a hard, durable steel is required, Illinois Steel Company has produced a successful alloy which can be treated at low cost: S. A. E. 4615.

A carefully controlled electric furnace practice assures uniformly fine grain with a high degree of cleanliness. Illinois' S. A. E. 4615 machines readily and responds to case carburizing with a minimum degree of warpage or distortion.

Many instances are known where a single quench is sufficient to provide physical qualities ordinarily obtained only with double quench.

For advice on the application of this steel to your own requirements, write today for a consultation with our metallurgist.

Illinois Steel Company

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

208 S. LA SALLE STREET, CHICAGO, ILL.

U·S STEEL

ILLINOIS *alloy* STEELS

make the entire monetary policy ineffective."

Mr. Muller concluded "How happy must an administration be that promulgates measures to limit production of necessities to find nature vieing with it in those restrictive measures. Nature's laws are immutable and cannot be flaunted as our constitution has been contravened."

President Muller acknowledged the loyal co-operation of the Associated Machine Tool Dealers' association in the efforts of Tool Builders' association to stimulate recovery in the machine tool industry.

At the conclusion of the reports of officers of the association, Robert M. Gaylord, president, Ingersoll Milling Co., Rockford, Ill., the association's representative in the Machinery and Allied Products institute, presented an extemporaneous report of the institute's history and activities. Plans for the coming year call for the preparation of legislation affecting the machinery manufacturing industries, promotion of foreign trade, and assistance in formation of trade associations in unorganized machinery groups.

Inspire Confidence in Employes

The question of company unions was discussed in an address by C. S. Ching, director of industrial and public relations, United States Rubber Co., New York. He emphasized particularly the necessity for building up morale and company pride. Keeping employes advised as to company affairs has been found highly desirable. Mr. Ching also recommended the making of contacts with employes for the purpose of inspiring confidence.

Speaking at the formal dinner on Thursday evening, Dr. Willard L. Thorp, economist, Washington, dealt at length with the situation in the capital and durable goods industries, explaining how they find themselves in their present predicament. He pointed to the neccessity for leveling off the peaks and filling in the valleys, this to be accomplished by a well worked out planning program.

Discussing "Selling Industry, and Industry Selling" at the concluding session of the meeting, Herman H. Lind, general manager of the association, urged the selling of greater machine tool use rather than only the concentration on obtaining the individual order at hand. He described activities of the association in connection with the movement to revive capital goods industries, including rehabilitation programs of the army and navy as well as the study of railroad shop needs and pointed out the fact that members of congress lack an intimate acquaintance with the actual condition and workings of individual industries and companies. He recommended that this deficiency be corrected through education.

The experience of industry in speaking for itself during various negotiations at Washington the past several months was regarded by the speaker as helpful. The public also needs to be more familiar with industry's position, Mr. Lind stated, pointing out that because of the interdependence of industry, agriculture, labor and finance, no one division can expect to prosper for long when any other is unhealthy. In connection with the industry's selling greater tool use, Mr. Lind suggested that others well could follow the example of the automotive industry in its modernization of plant facilities.

Frederick B. Heitkamp, sales manager, Cincinnati Milling Machine Co., Cincinnati, in presenting a comprehensive address on "Selling Technique," described the reactions of a group of machine tool buyers to a list of questions regarding selling practices of the industry. In response to the query of whether the user buys tools or is sold tools, most replies indicated the former. Criticisms received included the charges of too much over-selling and overpromising of machinery capabilities; the taking of too much of the buyers' time; the going over the heads of certain buyers; lack of perseverance; the ineffectivness of advertising matter. In the latter connection, Mr. Heitkamp recommended the cooperative effort of the industry in advertising and promoting equipment replacement.

Touching on the operation of the industry's code, the speaker pointed out that it has given an opportunity to concentrate on the selling of quality and service with less emphasis on price. Restrictions on hours of labor in the metalworking industry also have directed attention to efficiency of production facilities which should react to the benefit of the machine tool manufacturer.

Foreign Sales Picture Brighter

Picturing possibilities of greatly increased sales of machine tools in foreign countries, Harry Tipper, executive vice president, American Manufacturers' Export association, stated that fundamentally there is little difference between the cultivation of domestic and export trade except for the political impedimenta existing in the latter. Business results from a need for materials and equipment, and the increasing diversification in foreign industries will broaden the market for American tools.

Among favorable indications for better export business are: Improvement in economic conditions abroad; determination by other countries that nationalism has proceeded far enough as witnessed by the signing of numerous trade treaties; and action by the United States in aiding the financing of foreign trade and in seeking to effect treaties that will remove discriminatory tactics which have been retarding international commerce.

Mr. Tipper urged that business lend its support to the movement for the effecting of trade agreements, none of which as yet has been signed with other nations, emphasizing the increasing importance that foreign trade will have on the prosperity of home industry.

West Coast Steel House Has Cellular-Type Wall Units

(*Concluded from Page 30*)

lined does not limit it in the slightest degree to any style of architecture, and the builder may satisfy any whim as to design and finish, both interior and exterior. In fact the house when completed will look no different than any other house to which the public has become accustomed.

In the interior, for example, plastered walls are made possible by nailing celotex, masonite or a similar plaster base direct to the steel, and plastering on this material. This plaster board forms an excellent insulating and sound deadening material. This, coupled with the fact that the thick cellular steel walls with their many air circulating holes and the outside airports at the bottom of the cells, insures a constant automatic air motion through the cells and into the attic space. The effect is to keep heat out in the summer, and to keep heat in during the winter.

Hardwood floors are laid in mastic, which is waterproof asphaltum, directly on the floor slab, or they can be nailed to wooden strips embedded in the concrete. Tile is applied to the bathroom floors and walls, exactly the same as in other houses. It is also possible to have a basement and elevated floors, and any type of gas or electric heating equipment may be used.

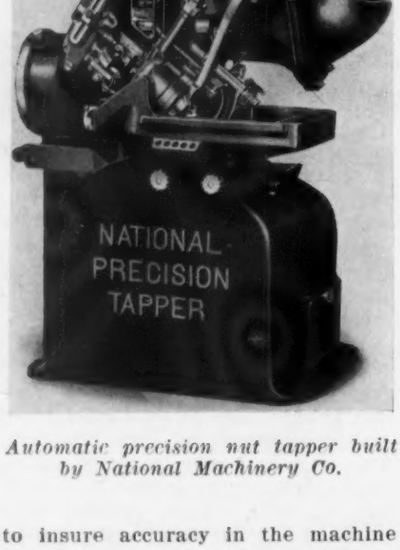
Windows may be of wood or steel, and walls may be of plaster, wood panel, or tile. Any exterior finish such as wood siding, brick, plaster, paint, or stucco, is easily applicable. The roof may be tile, shingles, slate or composition, and may be supported by wooden rafters instead of steel.

The builder may choose any design or finish, he wishes, and regardless of his choice, the house still will be proof against earthquakes, termites and attacks of the elements.

NEW EQUIPMENT

PRODUCTION FABRICATION
TREATMENT FINISHING

Precision Nut Tapper—National Machinery Co., Tiffin, O., is announcing a new line of nut tappers, shown herewith, which makes commercially possible the tapping of class 3 and class 4 fit nuts. These machines are ball bearing throughout with the working parts running in an oil bath



Automatic precision nut tapper built by National Machinery Co.

to insure accuracy in the machine functions. Accurate adjustments have been provided to insure the exact positioning of the tap and to accurately control the feed for pitch.

A special type of "hook" tap is employed, which retains the advantage of the original bent tap plus the ability to keep the tap accurately positioned for close limit tapping. An improved type of hopper serves to turn the nuts as they are delivered to the chute, so that the nuts are presented to the tap with the bottom face against the injector.

The machine is electrically driven, and is fully protected by automatic safety devices which operate an electric brake and which stop the machine almost instantaneously and without "overrun"—greatly reducing tap breakage. When the machine stops, a telltale light signals the operator. These machines are built in a full range of sizes from ¼ to 1-inch nuts, both hex and square, and they can also be arranged for tapping Dardelet nuts. The machines are furnished complete with motor and all electrical equipment.

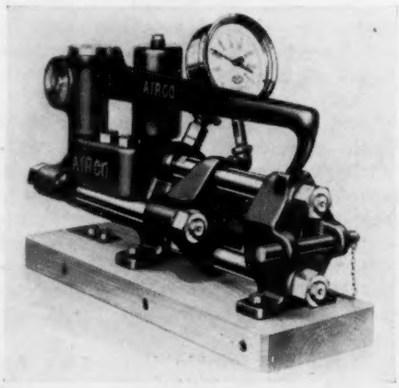
♦ ♦ ♦

Dial Gage—Brown & Sharpe Mfg. Co., Providence, R. I., is announcing a new dial gage designated No. 726-A, designed for use where inspection, testing, etc., are held to a fine degree of accuracy. The instrument is graduated to 0.0001-inch, is equipped with jeweled bearings and has a dial 2 7/32 inches diameter. The point of the gage is removable and points of different forms and lengths can be used. Dial face may be turned to bring zero under the index pointer.

♦ ♦ ♦

Portable Testing Machine—Air Reduction Sales Co., Lincoln building, New York, is bringing out a portable tensile and bend testing machine for welding work. The unit, shown herewith, is compact and comparatively light. It can be transported to the welding job so that specimens can be tested on the spot, rapidly and easily. The machine consists essentially of an oil pump, a hydraulically actuated piston or ram, two heads—one fixed and one movable—for gripping the test specimens, and four symmetrically located steel shafts, two of which transmit the piston motion and load to the moveable head. The other two shafts maintain the alignment of the two heads, and prevent the introduction of bending stresses in the tensile test specimen.

With a few strokes of the operating lever, after the specimen is set up, the operator of the testing machine can apply a direct load up to 40,000 pounds to specimens from 9½ to 10 inches long, up to ½-inch thick, and up to 1½ inches wide. Then, by using specimens of smaller cross-sectional areas than the maximum 1½ by ½-inch, loads equivalent to 150,000 pounds per square inch or higher can be applied. With these reduced size specimens the whole range of various types of steel can be tested by this quick and easy method. The stroke of the movable head is up 2¾ inches, more than



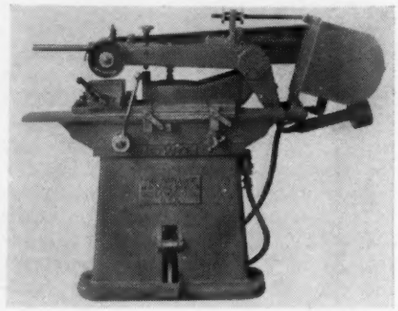
Airco portable tensile and bend testing unit for welding work

ample for practically any of the ferrous or nonferrous metals. The operation of the machine requires but little effort. For the bend test, the machine is provided with an anvil which fits into the movable head, and which bends the specimen against a pair of supports set 3 inches apart and cast integral with the body of the machine.

♦ ♦ ♦

Oil Groove Grinding Unit—Defiance Machine Works, Defiance, O., recently developed a machine for grinding grooves into hardened pins, shafts, etc., for oiling and other uses. It also may be used for grinding flat spots, cutting off and for similar operations where a high-speed grinding wheel or abrasive cutoff wheel is employed.

The table has a machined working surface 8 inches wide and 26 inches long with three T-slots ma-



Oil groove grinding machine developed by Defiance Machine Works

chined lengthwise, and three transverse key grooves for clamping and location of a vise or work holding fixture. Feed of the table is by rack and pinion operated by a hand lever. Adjustable stops regulate the length of stroke. For convenience of operation, a feed pinion is provided near each end of the table ways. Maximum table movement by either pinion is 16 inches.

The grinding spindle has a No. 3 Morse taper socket for receiving the grinding wheel adapter. Pulley on the spindle is 3 inches outside diameter. Three pulleys are furnished for the motor to produce spindle speeds of 8000, 5800 and 3900 revolutions per minute. Pulleys for other spindle speeds can be supplied.

Either a foot treadle or a hand lever may be used for advancing the grinding wheel to the cutting position. An adjustable screw stop regulates the depth of cut. Maximum vertical movement of the grinding wheel is 6 inches with an ad-

TIN PLATE THAT IS

New Exclusive Processes
end
Costly Complaints

GRANITE City Steel Company's exclusive shearing device saves you time, waste, and ends costly complaints. This new device—the Striene Shears—cuts both ends and both edges of the black plate *at the same time.* It positively prevents untrue edges and off sizes—assures sheets that *can't be out of square!* That's why Granite City Tin Plate runs through your guides smoothly—permits of a better slitting job—saves time and waste.

And Granite City Tin Plate is cleaned by a special process used only by this company. Its extra clean surface makes soldering surer—lithographing clearer and brighter.

Ask us to prove it. Just send for a FREE sample of Granite City Tin Plate. Simply clip and mail the coupon below for full information and your sample.

The First Producer *of* Open Hearth Tin Plate *in* America

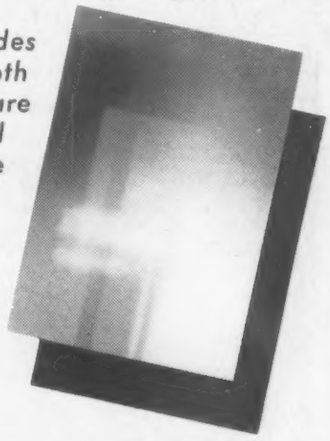
SINCE GRANITE CITY STEEL 1878

NRA

110 South Dearborn Street, Chicago
916 Walnut Street, Kansas City, Mo.
1805 Boatman's Bank Bldg., St. Louis
1613 Pioneer Building, St. Paul
1502 Mariner Tower, Milwaukee
5719 Ellsworth Avenue, Dallas

SHEARED BETTER
—Sheets Can't Be Out of Square—

Both sides and both edges are sheared at same time



CLEANED BETTER

To give surer soldering, brighter lithographing

USE THIS COUPON

Granite City Steel Co., Granite City, Ill.

Please send sample of Granite City Tin Plate.
We use_____size,_____base weight. We use tin plate in making_____.

*Name*_____

*Address*_____

GRANITE CITY STEEL CO., GRANITE CITY, ILLINOIS
GALVANIZED SHEETS • STEEL SHEETS • PLATES AND TIN PLATE

justable stop regulating the amount of movement. Thus unnecessary vertical travel in production is eliminated. A pivot supports the swinging arm and permits the grinding spindle to be positioned so that its centering may be either parallel or at right angles to the direction of travel of the table, or it may be set at any intermediate angle.

♦ ♦ ♦

Automatic Centering Reel—F. J. Littell Machine Co., Chicago, is marketing a new automatic centering

Automatic centering reel for holding coils of strip steel. The unit, developed by F. J. Littell Machine Co., has a capacity of 300 pounds

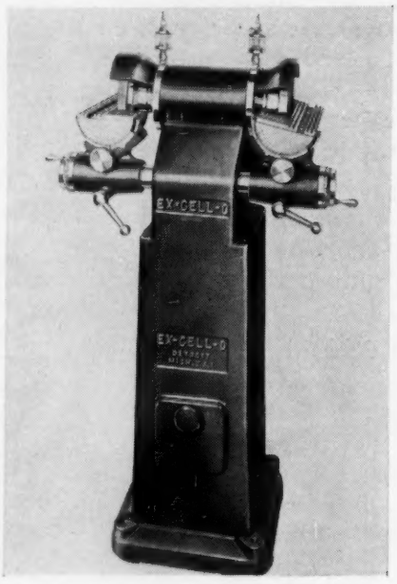
reel for holding coils of strip steel. Having a capacity of 300 pounds, this reel keeps the coil in balance by maintaining the arms equally spaced at all times from its center. When a coil of larger diameter is to be placed on the reels, the arms can be extended to a longer radius by turning the reel like a capstan. As shown in the accompanying illustration, a quick loading lever permits one man to place a coil on the reel. The reel spider is prevented from rotating during the loading by means of a lock. A loading lever with snap pin anchored to the upper arm gives the operator leverage to raise the coil and slide it onto the reel. Loading and centering in 1 minute's time is possible. Reels of 600-pound capacity also are available, and motor drives for both sizes may be obtained.

♦ ♦ ♦

Grinding and Lapping Machine—Ex-Cell-O Aircraft & Tool Corp., 1200 Oakman boulevard, Detroit, has placed on the market a new model grinding and lapping machine, shown herewith. The unit is designed for sharpening cemented carbide tipped tools. Through the introduction of hardened and ground plates on the surface of the tables at each end of the machine, greater accuracy can be maintained. These strips reduce wear on the surface of the table and make it easier to keep the top of each table clean while the machine is in operation.

The strips are mounted on adjustable U-shaped tables which have a horizontal micrometer adjustment. Two hardened and ground strips are mounted parallel with the face of each wheel. Two eccentric pins are placed between these strips to aid in aligning them properly. These strips form a slot which acts as a guide for the tool support. Across the ends of each table and in front of each wheel is mounted another hardened and ground plate. U-slots are machined lengthwise in each strip.

A ring-type grinding wheel is used at one end of the motor. It is mounted on a steel plate with countersunk holes for the mounting screws. This wheel is cupped and permits the use of the entire thickness of the grinding wheel. The wheel is 6 inches in diameter with a 1¾-inch



Ex-Cell-O grinding, lapping unit for sharpening cemented carbide tools

grinding surface on the side of the wheel. Softer wheels are used on this machine due to its unusual rigidity. The special iron lapping disk is 6 inches in diameter, ¾-inch thick, with a 1¾-inch lapping surface on the front of the disk and a ¾-inch lapping surface on the back.

♦ ♦ ♦

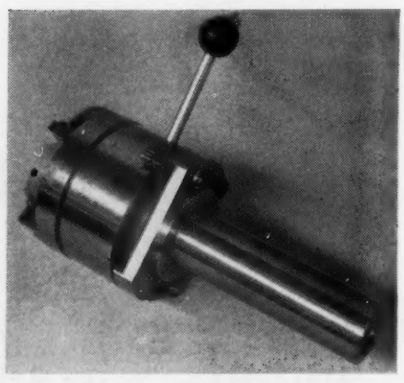
Thermo Master Regulator—Swartwout Co., 18511 Euclid avenue, Cleveland, recently developed a unit to control the temperature of steam after it has passed through a reducing and desuperheating station. The thermo master regulator as it is known, consists of a thermostat made up of two different pieces of metal having different coefficients of expansion. The operating element of the regulator is inserted in the steam line on the outlet side of the desuperheater. Power thus developed is transmitted through a lever to a three-way valve. This three-way valve admits pressure to or relieves pressure from the main diaphragm operated valve controlling the water supply to the desuperheater. It is built for controlling temperatures as high as 1000 Fahr. and incorporates special safety features for protecting working parts in event of failure of water supply to desuperheater. The device can also be used on any temperature control system where one large or a number of valves may be in operation and where it is essential that accurate temperatures be maintained.

♦ ♦ ♦

Stationary-Type Tangent Dies—Jones & Lamson Machine Co., Springfield, Vt., recently brought out a new line of stationary-type tangent dies, shown herewith. These dies are of the pulloff-type and have several unique features in addition to those embodied in the company's revolving-type tangent units which have been on the market for several years.

Chaser holders are round and lapped on the dovetails and take a wide bearing surface on the ground and lapped dovetail slots in the die body, as well as on the die body face. These holders can be changed, if necessary without disassembling the die. Dies are locked by pushing the locking lever handle in one direction and may be tripped, when desired, by pushing it in the opposite direction.

The driving flange is screwed onto the shank and dowelled in place, thus affording a drive at a point farthest from the center of the die.



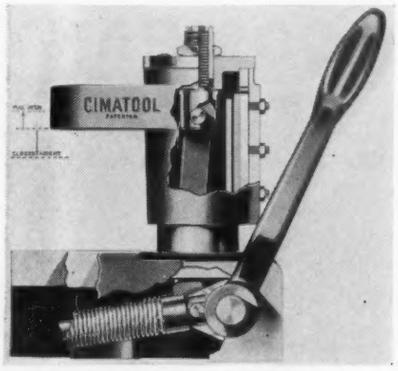
Jones & Lamson stationary-type tangent die made in five sizes

This driving arrangement also permits eccentric float to take care of misalignment of the die and work. The amount of eccentric float is determined by the clearance allowed between the outside diameter of a shank integral with the die body and the bore of the outer shank sleeve. On most machines requiring stationary dies, such as hand screw machines, turret lathes and Cleveland automatics, a long shank may be employed. By controlling the float in this long shank, the face of the dies remains more closely at right angles to the center of the work than is possible when the provision for float is confined to a shorter hookup. These new stationary-type dies are available in five sizes with a threading range from No. 8-32 to 2-inches diameter.

♦ ♦ ♦

Tool Jig—City Machine & Tool Co., Dayton, O., which recently acquired the Paulins Tool & Engineering Co., Detroit, has increased the effectiveness of the patented Paulins jig and improved its flexibility. The linkage and locking features have been preserved in the newer designs. This redesign work also includes both positive lock and spring-type mechanisms.

As shown in the accompanying illustration, all parts of the toggle and clamping mechanism are fully enclosed and protected—no interference from chips. A large diameter barrel materially adds to the sturdi-



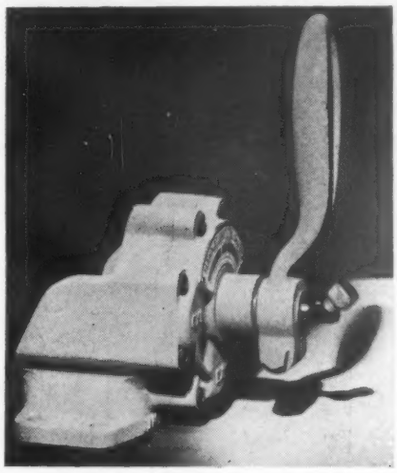
Paulins tool jig recently improved by City Machine & Tool Co.

ness of the tool. The main body of the jig remains serviceable in the face of even drastic production changes. If a new bushing plate becomes necessary, it can be furnished from stock. The manufacturer states that it is not special equipment but a standard tool. A complete stock of jigs and parts are now maintained in Detroit as well as at headquarters plant in Dayton.

♦ ♦ ♦

Manifold Valve—Hanna Engineering Works, Chicago, has designed a manifold valve, shown herewith, that is particularly adaptable to installations where a number of valves must be located close together. Necessary piping to and from valves is possible without interference with the piping to adjoining valves. Valves of the manifold type may be arranged so their intake and exhaust openings may be conveniently connected to a single supply or exhaust pipe either directly or by means of a manifold or pulpit block.

Between reversals the valve disk rotates on two eccentric points while

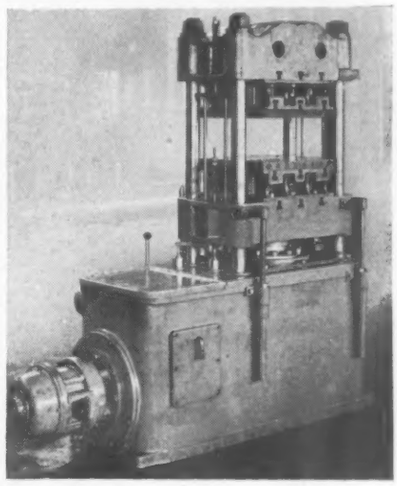


Balanced disk pressure is attained in new Hanna manifold valve

in contact with its seat. Circular lines of contact or scoring do not develop, and both the disk and seat wear uniformly across their full diameter. Balanced disk pressure throughout contact area is attained by the arrangement of the seat ports and disk pockets. The valve disk is seated on the valve bonnet and when renewals are necessary they can be made without removing the valve body from the pipe line or disturbing pipe connections or valve mountings.

♦ ♦ ♦

Plastic Molding Press—French Oil Mill Machinery Co., Piqua, O., recently developed a new type of semiautomatic molding press for bakelite and other plastic materials. The units, shown herewith, is completely self-contained, the press cylinder, pump, all valves, and all piping being installed in the base which also serves as the reservoir for the oil employed in the hydraulic system. A three horsepower motor drives a radial piston pump equipped with an automatic pressure regulator, bringing the pump to neutral



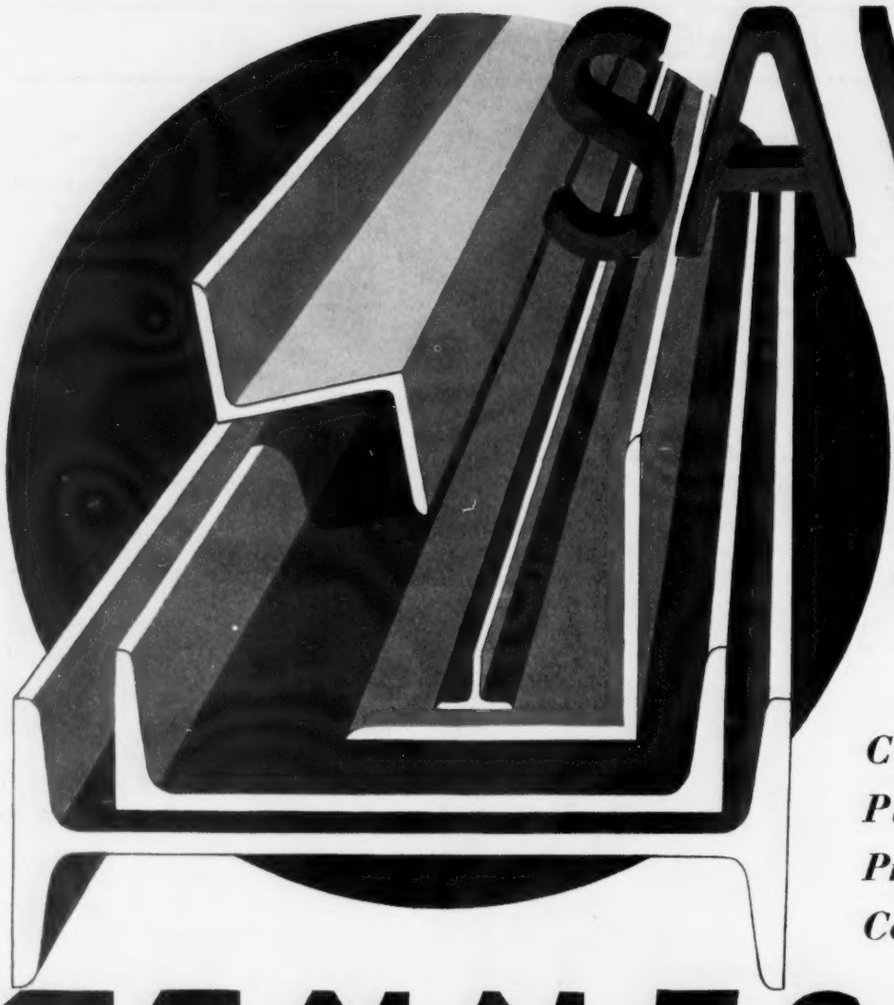
Plastic molding press designed by French Oil Mill Machinery Co.

position and maintaining the desired pressure without using safety or relief valves.

Full control of the press is effected through one lever. Seventy-five tons maximum pressure is built up. The press closes at rapid speed, acting through a 12-inch stroke. As dies near shut position the closing action slows down. After a predetermined interval, depending of course on the type of material and product being molded, the dies are separated and knockout pins actuated by knockout bars, eject the molded pieces. A lever controls the position of the bars which bring the knockout pins into action at the completion of the molding cycle. During the molding operation the pins recede into cavities provided in the bars. Hot plate of the press to which steam or electricity is applied to provide heat, is 20 inches square. When steam is employed, telescoping-type piping with a unique self-sealing joint is utilized.

♦ ♦ ♦

Inverted Converters—General Electric Co., Schenectady, N. Y., is marketing a new line of inverted converters ranging in size from ½ to 20 kilovolt amperes. These units are for use on small machine tools, etc., where only direct current is available. The converters are available for changing 115 or 230 volts direct current to 110 or 220 volts alternating current.



SAVE

TIME
EXPENSE
TROUBLE

◆

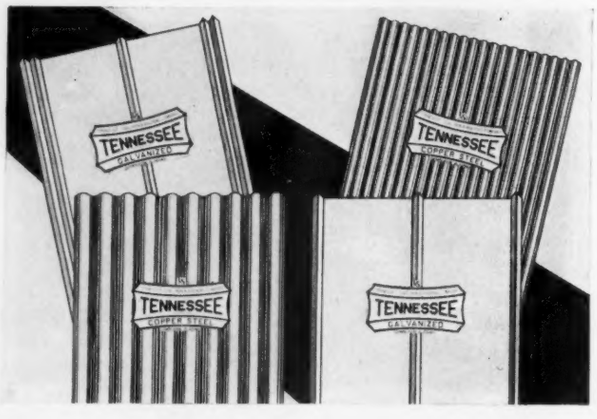
Concentrate Your Purchases of Steel Products for Southern Construction With—

TENNESSEE

COAL, IRON and RAILROAD COMPANY

South's Largest Steel Producer

The TENNESSEE COAL, IRON & RAILROAD COMPANY serves the Southern consumer with the widest range of steel products made by any steel producing company in the entire South. It is an undeniable advantage for Southern Steel Consumers to concentrate their purchases with a single company, which is large enough to meet all their requirements, near enough to make prompt deliveries, and known wherever steel is used for uniform maintenance of quality standards.



• *General Offices:* **Brown-Marx Building, Birmingham, Ala.** •
District Offices in Principal Cities

SUBSIDIARY OF UNITED US STEEL STATES STEEL CORPORATION

Steel Rate Rallies; Despite Slower Consumption

Strike Fears Stimulate Shipments—May Pig Iron Output Up 18.3 Per Cent—Scrap Steadier at Pittsburgh—Code May Loosen Price Structure

WHILE the general trend in steel consumption is slightly downward—based principally on declining automobile production—two factors last week tended to increase specifications and shipments and to rally steelworks operations 3 points to 60 per cent.

The first of these is the reluctance of consumers to lose their equities in second quarter contracts, with the certainty of higher prices beginning July 1 than they now are paying; and the second is the artificial stimulus supplied by fears of a steel strike.

Notwithstanding the radical statements issued last week by some labor groups, steelmakers are taking a hopeful view. The revised steel code, granting certain concessions to labor, goes in effect June 11, and the Washington administration is trying to avert a strike, set for June 16.

To some extent price provisions of the new code led consumers last week to hesitate in ordering material. Foremost, is the amendment which permits producers to file prices, regardless of any question as to their "fairness," and the right of others to meet these prices promptly.

Prices, once filed for a quarter, will be the maximum which can be charged in that period, irrespective of how much costs might be advanced. Apparently, prices will be no higher than named at the outset, but there always will be the possibility of them going lower. Due regard to costs and ethical standards are expected to weigh against unfair competition. To the great majority of consumers changes made in basing points will be of minor significance.

Prices Extended for Third Quarter; Pig Iron Output Highest Since April, 1931

June 11 was set as the effective date for the new code to allow for the 10-day period in which to file new prices. But with few exceptions books were opened June 1 for the third quarter at those prices which were named last April, after consumers had been given the opportunity to cover at lower levels. These prices incorporate the advances ranging from $3 to $8 a ton—offsetting some of the steelmakers' costs in increasing wages.

Steelmakers continue to take heavy shipments of scrap, but lack of new buying has resulted in further price reductions at Chicago, Detroit and Cleveland, lowering STEEL's iron and steel scrap composite 38 cents to $10.33. For the first time in six weeks, however, the downward trend in scrap prices at Pittsburgh halted, leading to the belief that with strike uncertainties overcome the market will show more stability. Pig iron shipments still are increasing moderately.

Daily average pig iron output in May—66,274 gross tons—was 14.5 per cent higher than in April, and largest since April, 1931. Total output—2,054,507 tons—was 18.3 per cent over the preceding month. Production for five months this year—7,912,747 tons—shows a gain of 149 per cent over the period last year. Stacks active May 31 numbered 115, a net increase of six in the month.

Sheet Mill Operations at 68 Per Cent; Tin Plate, 80; Rail Production Steady

Shape awards for the week dropped sharply to 9436 tons, holiday influences being adverse. The navy department and shipping board are cooperating in a proposal to aid in construction of 100 tankships in the next two years, which will require a substantial steel tonnage.

Eastern plate mills are expanding production, largely for railroad equipment requirements. Domestic freight car awards in May totaled 717; for the first five months this year, 21,424, largest for the period since 1930. Rail production in steady. Nickel Plate awarded 1000 tons of track fastenings.

Steelworks operations last week advanced 3 points to 65 per cent at Chicago; 2 to 63, Youngstown; 3 to 53, Buffalo; 1 to 79, Cleveland; and ½-point to 45½, eastern Pennsylvania. They were reduced 1 point to 50 per cent, Pittsburgh; and were unchanged at 100 per cent, Detroit; 84, New England; 74, Wheeling; 55, Birmingham.

Sheet mill operations, as a national average, last week were 68 per cent, and tin plate production 80 per cent.

STEEL's iron and steel price composite is unchanged at $34.77, and the finished steel composite $54.80.

COMPOSITE MARKET AVERAGES

	June 2	May 26	One Month Ago May, 1934	Three Months Ago March, 1934	One Year Ago June, 1933	Ten Years Ago June, 1924
Iron and Steel Composite	$34.77	$34.77	$34.77	$32.40	$28.73	$40.61
Finished Steel Composite	54.80	54.80	54.80	51.10	45.30	64.38
Steelworks Scrap Composite	10.33	10.71	11.30	12.30	9.55	13.97

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

	June 2, 1934	May 1934	March 1934	June 1933
Finished Material				
Steel bars, Pittsburgh	1.90	1.90	1.75	1.60
Steel bars, Chicago	1.95	1.95	1.80	1.70
Steel bars, Philadelphia	2.19	2.19	2.04	1.91
Iron bars, Terre Haute, Ind.	1.75	1.75	1.60	1.65
Shapes, Pittsburgh	1.85	1.85	1.70	1.60
Shapes, Philadelphia	2.05½	2.05½	1.90½	1.65
Shapes, Chicago	1.90	1.90	1.75	1.70
Tank plates, Pittsburgh	1.85	1.85	1.70	1.55
Tank plates, Philadelphia	2.03½	2.03½	1.88½	1.49½
Tank plates, Chicago	1.90	1.90	1.75	1.70
Sheets, No. 10, hot rolled, Pitts.	2.00	2.00	1.75	1.65
Sheets, No. 24, hot ann., Pitts.	2.65	2.65	2.25	2.10
Sheets, No. 24, galvan., Pitts.	3.25	3.25	2.85	2.70
Sheets, No. 10, hot rolled, Gary	2.10	2.10	1.85	1.80
Sheets, No. 24, hot anneal., Gary	2.75	2.75	2.35	2.25
Sheets, No. 24, galvan., Gary	3.35	3.35	2.95	2.85
Plain wire, Pittsburgh	2.30	2.30	2.20	2.10
Tin plate, per base box, Pitts.	5.25	5.25	5.25	4.25
Wire nails, Pittsburgh	2.60	2.60	2.35	1.85
Semifinished Material				
Sheet bars, open-hearth, Youngs.	30.00	30.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	30.00	30.00	26.00	26.00
Billets, open-hearth, Pittsburgh	29.00	29.00	26.00	26.00
Wire rods, Pittsburgh	38.00	38.00	36.00	35.00

	June 2, 1934	May 1934	March 1934	June 1933
Pig Iron				
Bessemer, del. Pittsburgh	19.76	19.76	19.26	17.26
Basic, Valley	18.00	18.00	17.00	15.00
Basic, eastern, del. eastern Pa.	19.76	19.76	18.76	16.19
No. 2 foundry, del. Pittsburgh	19.26	19.26	18.76	16.76
No. 2 foundry, Chicago	18.50	18.50	17.50	16.00
Southern, No. 2, Birmingham	14.50	14.50	13.50	12.00
No. 2X, Eastern, del. Philadelphia	20.63	20.63	19.63	16.76
Malleable, Valley	18.50	18.50	17.50	15.50
Malleable, Chicago	18.50	18.50	17.50	16.00
Lake Superior charcoal, del. Chi.	23.54	23.54	23.54	23.04
Gray forge, del. Pittsburgh	18.88	18.88	18.38	16.63
Ferromanganese, del. Pittsburgh	90.24	90.24	90.24	73.24
Scrap				
Heavy melting steel, Pittsburgh	$12.00	12.80	14.35	11.65
Heavy melting steel, eastern Pa.	10.25	10.90	11.70	9.50
Heavy melting steel, Chicago	9.75	11.00	12.00	8.80
No. 1 wrought, eastern Pa.	11.25	11.55	12.75	10.25
No. 1 wrought, Chicago	9.50	10.40	10.80	8.10
Rails for rolling, Chicago	11.25	12.35	12.75	10.25
Coke				
Connellsville, furnace, ovens	3.60	3.45	3.35	1.80
Connellsville, foundry, ovens	4.60	4.60	4.25	2.40

Steel, Iron, Raw Material and Metals Prices

Prices conform to American Iron and Steel institute schedules. Asterisks denote price changes this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	2.00c
Gary, base	2.10c
Chicago, del.	2.13c
New York, del.	2.33c
Philadelphia, del.	2.29c
Birmingham, base	2.15c
St. Louis, del.	2.32c
F.o.b. cars, dock Pacific ports	2.55c

HOT ROLLED ANN. No. 24

Pittsburgh, base	2.65c
Gary, base	2.75c
Chicago, del.	2.78c
Detroit, del.	2.85c
New York, del.	2.98c
Philadelphia, del.	2.94c
Birmingham, base	2.80c
St. Louis, del.	2.97c
F.o.b. cars, dock, Pacific ports	3.25c

GALVANIZED No. 24

Pittsburgh, base	3.25c
Gary, base	3.35c
Chicago, del.	3.38c
Philadelphia, del.	3.54c
New York, del.	3.58c
Birmingham, base	3.40c
St. Louis, del.	3.57c
San Francisco, f.o.b. cars, dock	3.85c

TIN MILL BLACK No. 28

Pittsburgh, base	2.85c
Gary, base	2.95c
St. Louis, del.	3.17c

COLD ROLLED No. 10

Pittsburgh, base	2.55c
Gary, base	2.65c
Detroit, delivered	2.75c
Philadelphia, del.	2.84c
New York, del.	2.88c
F.o.b. cars, dock, Pacific ports	3.25c

COLD ROLLED No. 20

Pittsburgh, base	3.15c
Gary, base	3.25c
Detroit, delivered	3.35c
Philadelphia, del.	3.44c
New York, del.	3.48c

ENAMELING SHEETS

Pittsburgh, No. 10	2.60c
Pittsburgh, No. 20	3.20c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh. Gary base, 10 cents higher

Tin plate, coke base contract	$5.25
Do., stock	4.90c
Long ternes, No. 24 unassorted	3.65c

Corrosion and Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel; sheets, 35c; plates, 28c; bars, 24c; hot-rolled strip, 24.50c; cold-rolled strip, 32.00c.

	A	B	C	D
Bars	17c	18.5c	21c	26c
Plates	20c	21.5c	24c	29c
Sheets	25c	28c	31c	35c
Hot strip	17c	18.5c	21c	26c
Cold strip	22.5c	24c	27c	35c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 19/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.85c
New York, del.	2.13c
Philadelphia, del.	2.03½c
Boston, del.	2.25c
Buffalo, del.	2.08½c
Chicago or Gary, base	1.90c
Cleveland, del.	2.03½c
Birmingham, base	2.00c
Coatesville, base	1.95c
Sparrows Pt., base	1.95c
Pacific Coast, f.o.b. cars, dock	2.40c
St. Louis, del.	2.12c

Structural Shapes

Pittsburgh, base	1.85c
Philadelphia, del.	2.05½c
New York del.	2.10½c
Boston, del.	2.23½c
Bethlehem, base	1.95c
Chicago, base	1.90c
Cleveland, del.	2.03½c
Buffalo, base	1.90c
Gulf ports	2.25c
Birmingham, base	2.00c
Pacific Coast, f.o.b. cars, dock	2.40c

Bars

SOFT STEEL

Pittsburgh, base	1.90c
Chicago or Gary, base	1.95c
Birmingham, base	2.05c
Buffalo, base	2.00c
Cleveland, base	1.95c
Detroit, del.	2.05c
Pacific Coast ports cars, dock, c.i.f.	2.45c
Philadelphia, del.	2.19c
Boston, del.	2.30c
New York, del.	2.23c
Pitts., forg. qual	2.05c-2.55c

RAIL STEEL
To Manufacturing Trade

Pittsburgh base	1.80c
Chicago or Gary, base	1.85c
Cleveland, base	1.85c
Buffalo, base	1.90c

IRON

Terre Haute, Ind. base 1.75c
Philadelphia, base.. 1.99c
Pittsburgh, refined.. 2.75c-7.50c

REINFORCING

New billet, cut lengths, carlots

Pittsburgh 2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young.... 2.10c
Gulf ports 2.45c
Pacific coast ports 3.00c
Philadelphia, del. 2.34c

Rail Steel

Pittsburgh, base 1.90c
Chicago, Buffalo, Cleveland, Birm., Young..... 1.95c
Gulf ports 2.30c
Pacific coast ports 2.45c

Wire Products □ □

(Prices apply to straight or mixed carloads; pool cars, or less, 10c up. 10% dis. on nail extras on straight or mixed carloads to one consignee.)

Base, Pittsburgh-Cleveland (Per 100-lb. keg)

Standard wire nails $2.60
Cement coated nails 2.60
Galvanized nails, 15 gage and coarser 4.60c
Do., 16 gage and finer.. 5.10c

(Per pound)

Polished staples 3.30c
Galvanized fence staples 3.55c
Barbed wire, galv. 3.00c
Annealed fence wire..... 2.45c
Galvanized fence wire.... 2.80c
Woven wire fencing (base column, c.l.).....$63.00
Plain wire, 6-9 gage to mfg. trade 2.30c

Anderson, Ind., Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire 3.20c

Chicago and Waukegan $1 higher, Worcester $2 higher.

Cold-Finished Carbon Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs..... 2.10c
20,000 to 59,999 lbs..... 2.05c
60,000 to 99,999 lbs..... 2.00c
100,000 lbs. and over.....1.97½c

Chicago, Cleveland, up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Shafting □ □ □

Turned and ground, Pitts. base

1⅛-inch 3.40c
1 7/16 to 1½-inch..... 2.90c
1 9/16 to 1⅞-inch..... 2.75c
1 11/16 to 2⅞-inch..... 2.60c
2 11/16 to 7-inch..... 2.45c

Alloy Steel Bars □

Hot Rolled

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem 2.55c

Alloy S.A.E.	Diff.	Alloy S.A.E.	Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20

4100 .15 to .25 Mo.....0.50
4600 .20 to .30 Mo. 125-1.75 Ni. 1.05
5100 .80-1.10 Cr. 0.45
5100 Cr. spring .....base
6100 bars 1.20
6100 spring 0.70
Cr., Ni., Van. 1.50
Carbon van. 0.95
9250.....carbon base plus extras

Strip and Hoops □

Hot strip to 23¾-in.
Pittsburgh 2.00c
Do., Chicago 2.10c
Do., del. Detroit.. 2.20c
Do., del. Phila..... 2.29c
Do., del. N. Y..... 2.33c
Cooperage hoop, Pittsburgh 2.10c
Do., Chicago 2.20c
Cold-rolled strip, Pitts., Cleve. 2.80c
Worcester, Mass. 3.00c

Rails, Track Material □

(Gross Tons)

Standard rails, mill $36.37½
Relay rails, Pitts.
24-45 lbs. $26.00
50-60 lbs. $23.00
70-75 lbs. $18.00
80-85 lbs. $25.00
100 lbs. $26.00
Light rails, billet qual., Pitts., Chi.. $35.00
Do., reroll. qual... $34.00
Angle bars, mills.... 2.55c
Spikes, R. R. base.. 2.40c
Track bolts, base.... 3.55c
Tie plates, base 1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs., up $1; 12 lbs., up $8; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons or more; diff. for less.

Bolts and Nuts □ □

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots. Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread .....70 off
Rolled thread, ½ x 6 and smaller .....70 off

MACHINE BOLTS

All sizes, cut thread, lag Screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts, without nuts .....70 off
Tire bolts .....60 off
Stove bolts, 70-25-10 off in pkgs.; 83 off in bulk, 5000 or more of a size.
Rolled thread machine bolts, ½ x 6 and smaller, 70 off
Step bolts .....66 off
Elevator bolts .....66 off

NUTS

Semifinished .....70 off

HEXAGON CAP SCREWS

Milled .....80-10-10 off
Upset 1-in., smaller .....85 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller....75-10 off
Upset, larger than 1-in.... ..... 75-10 off
Headless set screws .....75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland 3.00c
Struc., c. l., Chicago 3.10c
⅜-in. and smaller, Pitts., Chi., Cleve..70 and 5 off
Wrought washers, * Pitts., Chi., Phila.. 6.00 off

Cut Nails, Piling □

Cut nails, Pitts.; (10% discount on size extras) $2.75
Do. less carloads, 5 kegs or more, no discount on size extras $3.05
Do. less than 5 kegs; no discount on size extras $3.20
Steel piling, Pittsburgh.. 2.00c
Steel piling, Chi., Buff.... 2.10c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago delivered 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

Steel

In.	Blk.	Gal.
⅛ and ¼	53½	35
⅜	58½	47
½	62	52
¾—3	64	55

Iron

⅛	31½	15
¼	36½	20½
⅜—1¼	39½	25½
2	41½	26

LAP WELD

Steel

2	60	51
2½—3	63	54
3½—6	65	56
7 and 8	64	54
9 and 10	63½	53½

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½

LINE PIPE

Steel

⅛-inch, butt weld 50½
¼—⅜, buttweld..... 52½
½, butt weld 57½
¾, butt weld 61
1—3, butt weld 63
2-inch, lap weld 59
2½—3, lap weld 62
3½—6, lap weld 64
7—8, lap weld 63

Iron

⅛—1½-inch, black and galv. take 4 pts. over; 2½—6-inch 2 pts. over discounts for same sizes, standard pipe lists. 8—12-inch, no extra.

BOILER TUBES

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¾—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 2000 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron: 10,000 pounds to carloads, base less 5%; under 10,000 pounds, two points under base only.

SEAMLESS BOILER TUBES

Cold Drawn			
2—2¼	27	3¼—3½	41
2½—2¾	34	4	43
3	38	4½, 5, 6	36

(On 1—1¾-inch sizes mechanical tubing dis. apply.)

Hot Rolled			
2—2¼	33	3¼—3½	47
2½—2¾	40	4	49
3	44	4½, 5, 6	42

Quantity discounts: Carload and more gets preferentials of two 5%; 2000 to 999 pounds, 10 points off base and one 5%, under 2000 pounds, 15 points under base and one 5%.

Seamless Tubing □

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs..... 32%
15,000 ft. or 22,500 lbs..... 70%

Cast Iron Water Pipe □

Class B Pipe—Per Net Ton

6-in., & over, Birm..$36.00-37.00
4-in., Birmingham.. 39.00-40.00
4-in., Chicago 47.00-48.00
6 to 24-in., Chicago 44.00-45.00
6-in., & over, east. fdy. 40.00
Do., 4-in. 43.00

Class A pipe $3 over Class B. Stnd. fitgs., Birm. base....$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, 5 higher.

Semifinished Steel □

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., and Youngstown.. $29.00
Philadelphia 34.30
Forging, Pitts., Chi. and Buffalo 34.00

SHEET BARS

Pitts., Cleve., Young., Chi., Buff., Canton, O. 30.00

SLABS

Pitts., Cleve., Young. 29.00

WIRE RODS

Pitts., Cleveland 38.00
Chicago 39.00

SKELP

All grades, Pitts. and Chicago 1.70c

Coke □ □

Price Per Net Ton

BEEHIVE OVENS

Connellsville fur..... 3.60- 3.85
Connellsville fdry... 4.60
Connell. prem. fdy... 5.35
New River fdry..... 6.00
Wise county fdry... 4.25- 5.00
Wise county fur.... 3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del. 8.71- 9.31
Chi., ov., outside del. 8.50
Chicago, del. 9.25
New England, del... 10.50
St. Louis, del. 9.25
Birmingham, ovens 5.50
Indianapolis, del..... 8.75
Cincinnati, del..... 9.30
Cleveland, del. 9.25
Buffalo, ovens 7.50- 8.00
Detroit, ovens 8.50
Philadelphia, del..... 9.00

Coke By-Products □

Per gallon, producers' plants.

Tank lots

	Spot
Pure benzol	$0.19
90 per cent benzol	$0.19
Toluol	0.30
Solvent naphtha.....	0.26
Commercial xylol....	0.26

Per lb. f.o.b. New York

Phenol (200 lb. drums).. 0.163c
Do. (100 lbs.) 0.173c

Eastern Plants, Per Pound, In Barrels

†Naphthalene flakes and balls 6.00
Per 100 lb. Atlantic seaboard
Sulphate of ammonia $1.25

†Western prices ½-cent up.

Pig Iron

Delivered prices do not include switching charges except as noted. No. 2 foundry iron is 1.75-2.25 silicon; 25-cent differentials apply for each 0.25 silicon above 2.25. Gross tons.

	No. 2 Fdry.	Malleable	Basic	Bessemer
Basing Points:				
Bethlehem, Pa.	$19.50	$20.00	$19.00	$20.50
Birdsboro, Pa.	19.50	20.00	19.00	20.50
Swedeland, Pa.	19.50	20.00	19.00	20.50
Sparrows Point, Md.	19.50	.....	19.00	.....
From Swedeland, Pa., del. to Phila.	20.26	20.76	19.76	.....
From Bethlehem, del. to Brooklyn	21.77	22.27	.....	.....
From Bethlehem, del. to Newark, N. J.	20.89	21.39	.....	.....
Basing Point:				
Everett, Mass.	19.50	20.00	19.00	20.50
From Everett, del. to Boston	20.00	20.50	19.50	21.00
Basing Point:				
Buffalo	18.50	19.00	17.50	19.50
From Buffalo, del. to Boston	20.00	20.50	19.50	21.00
Basing Points:				
Neville Island, Pa.	18.50	18.50	18.00	19.00
Sharpsville, Pa.	18.50	18.50	18.00	19.00
Youngstown, O.	18.50	18.50	18.00	19.00
From Neville Island, Pa., del. to Pittsburgh district	(Neville Island base, plus 63c to $1.13 switching charges)			
Basing Points:				
Erie, Pa.	18.50	19.00	18.00	19.50
Cleveland	18.50	18.50	18.00	19.00
Toledo, O.	18.50	18.50	18.00	19.00
Detroit	18.50	18.50	18.00	19.00
From Detroit, del. to Saginaw, Mich.	20.60	20.60	20.10	21.10
From Cleveland, del. to Akron, Canton, O.	19.76	19.76	19.26	20.26
From Toledo, del. to Mansfield, O.	20.26	20.26	19.76	20.76
Basing Point:				
Jackson, O.	20.25	20.25	19.75	.....
Hamilton, O.	18.50	18.50	18.00	.....
From Hamilton, del. to Cincinnati	19.51	19.51	19.01	.....
Do., del. to Indianapolis	20.77	20.77	20.27	21.27
Basing Points:				
Duluth	19.00	19.00	.....	19.50
Chicago	18.50	18.50	18.00	19.00
Granite City, Ill.	18.50	19.00	18.00	.....
From Duluth, del. to St. Paul	20.94	20.94	.....	21.44
From Chicago, del. to Milwaukee	19.50	19.50	19.00	20.00
From Chicago, Toledo or Detroit, del. to Muskegon, Mich.	21.40	21.40	20.90	21.90
From Granite City, del. to St. Louis	19.00	19.50	18.50	.....
Basing Point:				
†Birmingham, Ala.	14.50	.....	13.50	19.00
From Birmingham, del. to:				
Boston	19.62	.....	19.50	.....
Newark, N. J.	20.51	.....	.....	.....
Brooklyn, N. Y.	21.39	.....	.....	.....
Baltimore	20.02	.....	19.90	.....
Philadelphia	19.88	.....	19.76	.....
Cleveland	18.62	.....	18.50	.....
Cincinnati	19.13	.....	19.01	.....
Chicago	††18.72	.....	18.60	.....
St. Louis	18.62	.....	18.50	.....

†Southern delivery only. Prices at northern points are adjusted to quotations on northern iron. ††Over 0.70 phos.

Basing Point:
Provo, Utah ..... 17.50 ..... 17.00 .....

LOW PHOS.

Basing Points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.—$23.50. Basing Point: †Johnson City, Tenn.—$23.50
†Off grade material is $19.50

Philadelphia, standard and copper bearing 24.63

GRAY FORGE		CHARCOAL	
Valley furnace	17.25	Lake Superior fur.	21.00
Pitts. dist. fur.	17.75	Do., del. Chicago	24.04

SILVERY

Jackson County, O., base; 6%—$22.75; 7—$23.75; 8—$24.75; 9—$25.75; 10—$26.75; 11—$27.75.

BESSEMER FERROSILICON

Jackson County, O., base; 10%—$27.75; 11—$28.75; 12—$30.25; 13—$31.75; 14—$33.25; 15—$34.75; 16—$36.25.

Iron Ore

LAKE SUPERIOR ORE
Gross ton, 51½% Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

EASTERN LOCAL ORES
Cents, unit, del. E. Pa.

Foundry and basic, 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

FOREIGN ORE
Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.00
No. Afr. & low phos.	9.50
Swedish basic, 65%	9.00
Swedish low phos.	9.50
Spanish No. Africa basic, 50 to 60%.	9.00
Tungsten, spot, sh. ton unit, duty pd.	$17.25-17.75
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$18.00

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	24.00
So. African, 52%	24.00
So. Afr., 49-51%	22.00
Indian, 58-50%	nominal
Indian, 48-50%	nominal

Refractories

Per 1000 f.o.b. Works

FIRE CLAY BRICK
First Quality

Pa., Ill., Ky., Md., Ga., Mo.	$45.00
Alabama	48.00
Second Quality	
Pa., Ill., Ky., Md., Mo., Ga., Ala.	40.00
Ohio	
First quality	$40.00
Intermediary	36.00
Second quality	25.00
MALLEABLE BUNG BRICK	
All bases	50.00
SILICA BRICK	
Pennsylvania	$45.00
Joliet, E. Chicago	54.00
Birmingham, Ala.	52.00
MAGNESITE	
Dead burned grain, Chester, Pa., Baltimore bases, net	40.00
Domes, Chewelah, Wash., base	22.00
BASIC BRICK	
Net ton, f.o.b. Baltimore, Plymouth Meeting, Pa. Chester, Pa.	
Magnesite brick	$65.00
Chrome brick	45.00
Chemically bonded magnesite	55.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$19.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$17.00

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid	85.00
del. Pittsburgh	90.24
Spiegeleisen, 19-20%, dom. fur. spot†	26.00
Ferrosilicon 50%, freight all., cl.	77.50
Do., less carload	85.00
Do., 75 per cent. Spot, $5 a ton higher.	126-130.00
Silicomang., 2½ carb.	90.00
2% carbon	95.00
1% carbon	105.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Ferrotungsten, stand., lb. cont. del.	1.35- 1.45
Ferrovanadium, 35 to 40% lb., cont., on analysis	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., allow., lb.	7.00
Do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17-19%, Rockdale, Tenn., basis, 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads, Quan. diff. apply.

Nonferrous Mill Products

F.o.b. mill base, cents per lb. except as specified. Copper, brass products based on 8.50c Conn. copper

Sheets	
Yellow brass (high)	14.25
Copper, hot rolled	15.50
Lead, cut, to jobbers	7.75
Zinc, 100-lb. base	9.00
Tubes and Pipes	
High yellow brass	16.75
Seamless copper	16.75
Rods	
High yellow brass	12.75
Copper, hot rolled	12.75
Anodes	
Copper untrimmed	13.25
Wire	
Yellow brass (high)	14.75

Old Metals

Deal, buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.75- 5.00
Chicago	4.62½-4.87½
*Cleveland	4.75- 5.00
St. Louis	4.75- 5.00
Heavy Copper and Wire	
New York	6.25-6.37½
Chicago, No. 1	5.87½-6.12½
Cleveland	5.75- 6.00
St. Louis	5.50- 5.75
Composition Brass Borings	
New York	4.50- 4.75
Light Copper	
New York	5.37½-5.62½
Chicago	4.62½-4.87½
Cleveland	4.75- 5.25
St. Louis	5.00- 5.25
Light Brass	
Chicago	2.62½-2.87½
Cleveland	2.50- 2.75
Lead	
New York	3.00- 3.25
Cleveland	3.00- 3.25
Chicago	2.75- 3.00
St. Louis	3.25- 3.40
Zinc	
New York	2.25- 2.50
Cleveland	2.00- 2.25
St. Louis	2.50- 2.75
Aluminum	
*Clipps, soft, Clev.	12.00-12.50
*Borings, Cleveland	6.25- 6.75
*Mixed, cast, Cleve.	10.25-10.75
Mixed cast, St. L.	11.75-12.00

Secondary Metals

Brass ingot, 85-5-5-5	8.75
*Remelt al. St. No. 12	15.00

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL	□
Birmingham	10.00-10.50
Boston, dealers	5.75- 6.00
Buffalo, No. 1	11.00-12.00
Buffalo, No. 2	9.50-10.00
Chicago, No. 1	9.50-10.00
Cleveland, No. 1	9.00- 9.50
Cleveland, No. 2	8.50- 9.00
Detroit, No. 1	8.00- 8.50
Detroit, No. 2	7.00- 7.50
Eastern Pa.	10.00-10.50
Eastern Pa., No. 2	8.00- 8.50
Federal, Ill.	8.00- 8.50
Granite City, R. R.	8.50- 9.00
Granite City, No. 2	7.00- 7.50
N. Y., deal. R. R.	8.50
N. Y., deal. No. 2	7.00
Pittsburgh, No. 1	11.75-12.25
Valleys, No. 1	11.50-12.00
COMPRESSED SHEETS	□
Buffalo, dealers	10.50-11.50
Chicago, factory	8.50- 9.00
Cleveland	8.50- 9.00
Detroit	7.50- 8.00
E. Pa., new mat.	9.50-10.00
Pittsburgh	11.25-11.75
St. Louis	7.50- 8.00
Valleys	11.00-11.50
BUNDLED SHEETS	□ □
Buffalo	7.50- 8.00
Cincinnati, del.	6.50- 7.00
Cleveland, No. 2	7.00- 7.25
Pittsburgh	10.25-10.75
St. Louis	5.00- 5.50
SHEET CLIPPINGS LOOSE	□
Chicago	5.00- 5.50
Cincinnati	5.00- 5.50
Detroit	4.50- 5.00
St. Louis	4.50- 5.00
STEEL RAILS, SHORT	□
Birmingham	12.00-12.50
Buffalo	13.00-13.50
Chicago (3 ft.)	11.50-12.00
Chicago (2 ft.)	12.00-12.50
Cincinnati, del.	10.50-11.00
Detroit	10.00-10.50
Pitts., open-hearth, 3 ft. and less	14.00-14.50
St. Louis, 2 ft. & less	10.75-11.25
STEEL RAILS, SCRAP	□
Boston	6.25- 7.00
Chicago	9.50-10.00
Pittsburgh	12.25-12.75
STOVE PLATE	□ □
Birmingham	7.00- 8.00
Boston, dealers	3.25- 3.75
Buffalo	9.00- 9.50
Chicago, net	7.00- 7.50
Cincinnati, dealers	5.00- 5.50
Detroit, net	6.00- 6.50
Eastern Pa.	8.50- 9.00
N. Y., deal. fdry.	6.00
St. Louis	6.50- 7.00
COUPLERS, SPRINGS	□
Buffalo	13.00-13.50
Chicago, springs	11.00-11.50
Eastern Pa.	13.50
Pittsburgh	14.00-14.50
St. Louis	9.50-10.00

ANGLE BARS—STEEL	□
Chicago	11.00-11.50
St. Louis	9.00- 9.50
LOW PHOSPHORUS	□ □
Buffalo, billets and bloom crops	13.00-14.00
Cleveland, billet, bloom crops	13.00-13.50
Eastern Pa. crops	15.00-15.50
Pittsburgh, billet, bloom crops	14.75-15.25
Pittsburgh, sheet bar crops	13.75-14.25
FROGS, SWITCHES	□ □
Chicago	9.50-10.00
St. Louis, cut	9.00- 9.50
SHOVELING STEEL	□ □
Chicago	9.50-10.00
Federal, Ill.	8.00- 8.50
Granite City, Ill.	7.00- 7.50
RAILROAD WROUGHT	□
Birmingham	6.50- 7.00
Boston, dealers	6.00- 6.50
Buffalo, No. 1	8.00- 8.50
Buffalo, No. 2	11.00-12.00
Chicago, No. 1 net	8.25- 8.75
Chicago, No. 2	9.50-10.00
Cincinnati, No. 2	7.50- 8.00
Eastern Pa.	10.00
N. Y., No. 1 deal.	7.25- 7.75
St. Louis, No. 1	5.50- 6.00
St. Louis, No. 2	8.00- 8.50
SPECIFICATION PIPE	□
Boston	4.50- 4.75
Eastern Pa.	9.00
New York, dealers	3.50- 3.75
BUSHELING	□ □
Buffalo, No. 1	10.50-11.50
Chicago, No. 1	8.75- 9.25
Cinci., No. 1 deal.	6.00- 6.50
Cincinnati, No. 2	7.00- 7.25
Cleveland	7.00- 7.25
Detroit, No. 1 new	7.00- 7.50
Valleys, new No. 1	11.00-11.50
MACHINE TURNINGS	□
Bimingham	4.50- 5.00
Boston, dealers	1.25- 1.50
Buffalo	5.00- 5.50
Chicago	6.00- 6.50
Cincinnati, dealers	4.50- 5.00
Cleveland	7.00- 7.25
Detroit	4.50- 5.00
Eastern Pa.	5.50- 6.00
New York, dealers	1.50- 1.75
Pittsburgh	7.25- 7.75
St. Louis	4.00- 4.50
Valleys	7.50- 8.00
BORINGS AND TURNINGS	□
For Blast Furnace Use	
Boston, dealers	3.25- 3.50
Buffalo	6.50- 7.00
Cincinnati, dealers	4.50- 5.00
Cleveland	7.00- 7.25
Detroit	5.50- 6.00

Eastern Pa.	6.00
New York, dealers	1.50- 1.75
Pittsburgh	8.25- 8.75
CAST IRON BORINGS	□ □
Birmingham, plain	4.50- 5.00
Boston, chemical	8.50- 9.00
Boston, dealers	3.25- 3.50
Buffalo	6.50- 7.00
Chicago	6.00- 6.50
Cincinnati, dealers	4.50- 5.00
Cleveland	7.00- 7.50
Detroit	5.50- 6.00
E. Pa., chemical	12.00-15.00
New York, dealers	1.50- 1.75
Pittsburgh	8.25- 8.75
St. Louis	4.25- 4.75
PIPE AND FLUES	□ □
Cincinnati, dealers	4.75- 5.25
RAILROAD GRATE BARS	□
Buffalo	6.50- 7.00
Chicago, net	6.75- 7.25
Cincinnati	4.50- 5.00
Eastern Pa.	8.50
New York, dealers	5.00- 5.50
St. Louis	6.00- 6.50
FORGE FLASHINGS	□ □
Boston, dealers	4.00- 4.75
Buffalo	11.00-11.50
Cleve., over 10 in.	8.00- 8.50
Detroit	6.50- 7.00
FORGE SCRAP	□ □
Boston, dealers	4.00- 4.75
Chicago, heavy	11.00-11.50
Eastern Pa.	10.00
ARCH BARS, TRANSOMS	□
St. Louis	11.25-11.75
AXLE TURNINGS	□ □
Boston, dealers	4.50- 5.00
Buffalo	9.00- 9.50
Chicago, elec. fur.	9.50-10.00
Cleveland	7.00- 7.25
Eastern Pa.	11.00
St. Louis	7.00- 7.50
STEEL CAR AXLES	□ □
Birmingham	10.50-11.50
Boston, ship, point.	9.00- 9.50
Buffalo	13.00 13.50
Chicago, net	11.00-11.50
Eastern Pa.	14.00-15.00
St. Louis	11.00-11.50
SHAFTING	□ □
Boston, ship point.	10.25-10.50
Eastern Pa.	16.00
New York, dealers	10.75-11.25
St. Louis	12.50-13.00
CAR WHEELS	□ □
Birmingham, iron	8.50- 9.00
Boston, iron deal.	6.50- 6.75
Buffalo, iron	12.25-12.75
Buffalo, steel	13.00-13.50
Chicago, iron	10.50-11.00

Chicago, rolled steel	11.00-11.50
Cincinnati, iron	8.00- 8.50
Eastern Pa., iron	12.50-13.00
Eastern Pa., steel	13.50
Pittsburgh, iron	11.00-11.50
Pittsburgh, steel	14.00-14.50
St. Louis, iron	8.25- 8.75
St. Louis, steel	9.00- 9.50
NO. 1 CAST SCRAP	□ □
Birmingham	9.00- 9.50
Boston, No. 2	5.50- 6.00
Boston, tex. con.	10.50-11.00
Buffalo, cupola	10.00-10.50
Buffalo, mach.	11.50-12.00
Chicago, agri. net	7.50- 8.00
Chicago, mach. net	8.50- 9.00
Chi., railroad net	8.00- 8.50
Cinci., mach. cup	9.50-10.00
Cleveland, cupola	11.75-12.25
Detroit, net	8.50- 9.00
Eastern Pa., cupola	12.00
Pittsburgh, cupola	13.00-13.50
San Francisco, del.	13.50-14.00
Seattle	7.00- 8.50
St. Louis, No. 1	8.25- 8.75
St. L., No. 1 mach.	10.00-10.50
HEAVY CAST	□ □
Boston, del.	6.50- 6.75
Buffalo, break	8.50- 9.00
Cleveland, break.	8.25- 8.75
Detroit, break.	6.50- 7.00
Detroit, auto net	9.00- 9.50
Eastern Pa.	10.50-11.00
N. Y., No. 1, deal.	7.00- 7.50
N. Y., break. deal.	6.50- 7.00
Pittsburgh	10.25-10.75
MALLEABLE	□ □
Boston, consum.	12.50-12.75
Buffalo	12.50-13.00
Chicago, R. R.	11.00-11.50
Cincinnati, agri. del.	8.00- 8.50
Cinci., R. R. del.	9.00- 9.50
Cleveland, rail.	12.50-13.00
Detroit, auto	8.50- 9.00
St. Louis, R. R.	9.00- 9.50
Eastern Pa., R. R.	11.50-12.00
RAILS FOR ROLLING	□
5 feet and over	
Birmingham	10.50-11.50
Boston, dealers	7.00- 7.25
Buffalo	12.00-12.50
Chicago	11.00-11.50
Eastern Pa.	12.00-13.00
New York, dealer	7.50- 8.00
St. Louis	9.75-10.25
LOCOMOTIVE TIRES	□
Chicago (cut)	11.00-11.50
St. Louis, No. 1	9.75-10.25
LOW. PHOS. PUNCHINGS	□
Buffalo	13.75-14.25
Chicago	11.00-11.50
Eastern Pa.	14.50-15.00
Pittsburgh	13.50-14.00

Nonferrous Metal Prices of the Week

Spot unless otherwise specified. Cents per pound

	Copper			Straits Tin		Lead	Lead	Zinc	Aluminum	Antimony	Ingot
	Electro., del. Conn.	Lake, del. Midwest	Casting, refinery	New York Spot	New York Futures	N. Y.	East St. L.	St. L.	98-99%	Spot, N. Y.	Nickel
May 26	8.50	8.62½	8.25	53.00	52.97½	4.00	3.85	4.35	*22.90	8.37½	36.00
May 28	8.50	8.62½	8.25	53.10	53.00	4.00	3.85	4.35	*22.90	8.25	36.00
May 29	8.50	8.62½	8.25	53.00	52.90	4.00	3.85	4.30	*22.90	8.25	36.00
May 30—Holiday											
May 31	8.50	8.62½	8.25	52.60	52.47½	4.00	3.85	4.30	*22.90	8.25	36.00
June 1	8.50	8.62½	8.25	52.37½	52.30	4.00	3.85	4.30	*22.90	8.25	36.00

*Nominal range 19.00c to 22.90c.

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	□
Baltimore*	3.00c
Boston††	3.05c
Buffalo	2.95c
Chattanooga	3.41c
Chicago	3.05c
Cincinnati	3.25c
Cleveland	3.05c
Detroit	3.13½c
Houston	3.00c
Los Angeles	3.70c
New Orleans	3.40c
New York‡(d)	3.32c
Pittsburgh(h)	3.00c
Philadelphia*	3.00c
San Francisco	3.60c
Seattle	3.60c
St. Louis	3.29c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS	□
Portland	3.40c
Baltimore*	3.00c
Chattanooga	3.41c
Chicago	2.75c
Cincinnati	3.25c
New York‡(d)	3.32c
Philadelphia*	3.00c
St. Louis	3.29c
Tulsa	3.25c

REINFORC. BARS	□
Buffalo	1.95c
Chattanooga	3.41c
Chicago	2.10c-2.60c
Cleveland (c)	1.97½c
Cincinnati	3.10c
Houston	3.25c
Los Ang., cl.	2.15c
New Orleans	3.50c
Pitts., plain(h)	3.15c
Pitts., twisted squares (h)	3.27½c
San Francisco	2.45c
Seattle	3.50c
St. Louis	3.44c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES	□
Baltimore*	3.00c
Boston††	3.22c
Buffalo	3.20c
Chattanooga	3.61c
Chicago	3.25c
Cincinnati	3.45c
Cleveland	3.36c
Detroit	3.45c
Houston	3.00c
Los Angeles	3.70c
New Orleans	3.60c
New York(d)	3.42c
Philadelphia*	3.00c
Pittsburgh(h)	3.20c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.49c
St. Paul	3.25c
Tulsa	3.50c

PLATES	□
Baltimore*	3.00c
Boston††	3.23c
Buffalo	3.20c
Chattanooga	3.61c
Chicago	3.25c
Cincinnati	3.45c
Cleveland, ¼-in. and over	3.36c
Detroit	3.30c
Detroit, ⅜-in.	3.65c
Houston	3.00c
Los Angeles	3.70c
New Orleans	3.60c
New York(d)	3.45c
Philadelphia*	3.00c
Phila. floor	5.00c
Pittsburgh(h)	3.20c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.49c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE	□
Baltimore*	3.20c
Boston††	3.40c
Buffalo	3.10c
Chattanooga	3.51c
Chicago	3.20c
Cincinnati	3.35c
Cleveland	3.26c
Det., 8-10 ga.	3.28½
Houston	3.35c
Los Angeles	3.80c
New Orleans	3.70c
New York	3.42c
Portland	3.75c
Philadelphia*	3.20c
Pittsburgh(h)	3.10c
San Francisco	3.75c
Seattle	3.75c
St. Louis	3.44c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK	□
Baltimore*†	3.76c
Boston (g)	4.15c
Buffalo	3.25c
Chattanooga	4.41c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	4.16c
Detroit	4.185c
Los Angeles	4.35c
New York	4.05c
Philadelphia*†	3.80c
Pittsburgh**	3.80c
Portland	4.40c
San Francisco	4.40c
Seattle	4.40c
St. Louis	3.94c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS	□
Baltimore*†	4.36c
Buffalo	4.00c
Boston (g)	4.75c
Chattanooga	5.01c
Chicago (h)	4.70c
Cincinnati	4.85c
Cleveland	4.76c
Detroit	4.85c
Houston	4.40c
Los Angeles	5.05c
New Orleans	4.95c
New York	4.25c
Pitts.** (h)	4.30-4.60c
Portland	5.00c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.54c
St. Paul	4.19c
Tulsa	5.10c
Philadelphia*†	4.40c

BANDS	□
Baltimore*	3.30c
Boston††	3.40c
Buffalo	3.30c
Chattanooga	3.76c
Chicago	3.45c
Cincinnati	3.60c
Cleveland	3.51c
Detroit, ⅜-in. and lighter	3.53½c
Houston	3.25c
Los Angeles	3.90c
New Orleans	3.95c
New York(d)	3.77c
Philadelphia	3.30c
Pittsburgh(h)	3.85c
Portland	3.90c
San Francisco	4.05c
Seattle	3.90c
St. Paul	3.20c
Tulsa	3.45c
St. Louis	3.69c

HOOPS	□
Baltimore	2.80c
Boston	4.40c
Buffalo	3.55c
Chicago	3.45c
Cincinnati	3.60c
Det., No. 14 and lighter	3.53½c
New York	3.77c
Philadelphia	3.55c
Pittsburgh(h)	3.85c
Seattle	5.60c
St. Paul	3.75c

COLD FIN. STEEL	□
Baltimore (c)	3.71c
Boston	4.00c-4.50c
Buffalo (h)	3.55c
Chattanooga*	4.06c
Chicago (h)	3.50c
Cincinnati	3.70c
Cleveland (h)	3.50c
Detroit	3.63½c
Los Ang.(f)(d)	5.95c
New Orleans	4.30c
New York	3.92c-4.42c
Philadelphia	3.73c
Pittsburgh(h)	3.45c
Portland (f)	4.75c
San Fran.(f)(d)	5.95c
Seattle (f)(d)	4.75c
St. Paul	3.20c
St. Louis	3.74c
Tulsa	4.65c

COLD ROLL. STRIP	□
Boston, 0.100-in., 500 lb. lots	5.35c
Buffalo	5.25c
Chicago (b)	3.45c
Cincinnati	5.80c
Cleveland (b)	3.20c
Detroit	3.33c
Philadelphia	4.00c
New York	4.70c
St. Louis	5.74c

(b) Plus straightening, cutting and quantity differentials.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) 50 bundles or over.
(h) Outside delivery, 10c less.

‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.
†New extras apply.
††Base 40,000 lbs. extras on less.

Prices at Detroit, Cleveland, Chicago, Pittsburgh, Cincinnati, Chattanooga, New York, Boston, St. Louis on heavier lines are subject to new quantity differentials:

399 pounds and less, up 50 cents; 400 to 9999 pounds, base; 10,000 to 19,999 pounds, 15 cents under; 20,000 to 39,999 pounds, 25 cents under; 40,000 pounds and over, 35 cents under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, May 31

Export Prices f. o. b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports £ s d		Continental Channe lor North Sea ports, metric tons Gold parity, $4.8665 £ s d	£ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon.	$15.21	3 0 0	$8.03	1 13 0
Basic bessemer	13.69	2 14 0*	7.30	1 10 0
Hematite, Phos. .03-.05	15.59	3 1 6	....	.....
SEMIFINISHED STEEL				
Billets	$27.89	5 10 0	$11.44	2 7 0
Wire rods, No. 5 gage	39.55	7 16 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$39.29	7 15 0	$26.77	5 10 0
Merchant bars	1.70c	7 10 0	.69c to .72c	3 2 6 to 3 5 0
Structural shapes	1.67c	7 7 6	.63c to .66c	2 17 6 to 3 0 0
Plates, †¼ in. or 5 mm.	1.81c	8 0 0	.91c	4 2 6
Sheets, black, 24 gage or 0.5 mm.	2.09c	9 5 0	1.21c to 1.24c	5 10 0 to 5 12 6
Sheets, gal., 24 gage, corr.	2.54c	11 5 0	1.43c	6 10 0
Bands and strips	1.86c	8 5 0	.88c	4 0 0
Plain wire, base	2.20c	9 15 0	1.18c	5 7 6
Galvanized wire, base	2.60c	11 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	2.71c	12 0 0	1.27c	5 15 0
Tin plate, box 108 lbs.	$ 4.37	0 17 3	....	.....

British ferromanganese £9 0s 0d 4($3.74) f.o.b. $85 delivered Atlantic seaboard, duty-paid. German ferromanganese

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$17.11	3 7 6(a)	$12.52	190	$13.78	295	$24.62	63
Basic bessemer pig iron	16.48	3 5 0(a)	*12.19	185	13.54	290	27.16	(b)69.50
Furnace coke	4.44	0 17 6	7.91	120	5.14	110	7.52	19.25
Billets	27.89	5 10 0	28.34	430	20.55	440	37.71	96.50
Standard rails	1.86c	8 5 0	2.10c	700	2.31c	1,100	2.34c	132
Merchant bars	1.94c	8 12 0	1.68c	560	1.16c	550	1.95c	110
Structural shapes	1.98c	8 15 0	1.65c	550	1.16c	550	1.90c	107.50
Plates, †¼-in. or 5 mm.	1.92c	8 10 0	2.10c	700	1.47c	700	2.25c	127
Sheets, black	2.37c	10 10 0§	2.55c	850‡	1.63c	775‡	2.55c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.94c	13 0 0	4.50c	1,500	3.15c	1,500	6.55c	370
Plain wire	2.20c	9 15 0	3.39c	1,130	2.31c	1,100	3.06c	173
Bands and strips	2.37c	10 10 0	1.95c	650	1.47c	700	2.25c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. (a) del. Middlesbrough. (b) hematite

Bars

Bar Prices, Page 56

Cleveland—The new steel code provides that when prices are once filed for a quarter they may not be advanced during that period, in effect guaranteeing consumers maximum prices for three months. On the other hand, it does not prevent producers from filing lower prices, without any other restriction than might be imposed by their costs and ethics of fair practice. The code was made effective June 11 to provide a 10-day period in which new prices might be filed June 1, but books were opened at the current levels; for soft steel bars 1.95c, base Cleveland. The apparent tendency of the new code to loosen the market led some consumers last week to wait before releasing more material for second quarter contracts. Consumers with definite requirements increased their specifications due to steel strike threats.

Pittsburgh—On small spot orders for merchant bars, producers are not able to promise shipments much earlier than two to three weeks in view of contract obligations which must be rolled and shipped during June. A portion of unfilled balances on bars were cancelled as May closed, where contracts had been on a monthly basis. The hot-rolled carbon bar market is quoted 1.90c base, Pittsburgh, and presumably will continue so for third quarter. Hot-rolled alloy bars at 2.55c, Pittsburgh, are unchanged.

Chicago—Third quarter bar prices will continue at recent levels, 1.95c for soft steel bars, 1.85c for rail steel and 1.75c for bar iron. While specifications are slightly smaller than several weeks ago, the rate continues fairly heavy and shipments are aided by apprehension on the part of consumers regarding supplies in the event of a strike this month. Automotive and farm implement consumption is moderately lower. Tractor manufacturers are maintaining fairly active operations.

New York—Specifications for commercial steel bars are short of expectations but show improvement. Specifications are largely from manufacturing consumers.

Philadelphia—Prices of commercial steel bars are expected to go into third quarter unchanged. Contracting is expected to be light for the present, with opening of books probably delayed until steel code changes are better understood. Producers expect little pressure from consumers for the present. With consumers protected against declines under the new code regulation, regardless of the type of contract some steelmakers believe contracting for third quarter will be particularly light.

Washington — The navy closes June 8 on 502 tons of steel forgings under schedule 2566.

Plates

Plate Prices, Page 56

Pittsburgh—The market on plates for third quarter continues at 1.85c base, Pittsburgh, through the inference of producers recently in failing to announce different asking prices since May 21. McClintic-Marshall Corp. is completing fabrication and assembly of 600 tons of plates at Leetsdale, Pa., in two twin-hull drilling barges for the Texas Co., Houston, Tex. Tankmakers report an absence of orders and little inquiry.

Cleveland—Books for second quarter were opened June 1 at 1.85c, base, Pittsburgh, for steel plates. This incorporates the $3 a ton advance announced in April for all material not previously covered by contract. Little interest so far is manifest in third quarter requirements, as consumers still have large tonnages to take this month on second quarter contracts. Steel strike threats have stimulated orders to some extent. Releases for railroad material lead in the market.

Chicago—Plate demand is largely miscellaneous, with inquiries for tanks and other fabricated plate products light. Structural work is taking fair sized tonnages, while requirements of railroads and equipment builders show further gains.

Boston—A fair volume of steel plates is being specified. Two tanks at Portland, Me., take close to 800 tons. Small water tank inquiry is increasing.

New York—Specifications from oil companies lead in the steel plate market and are expanding. Some sellers report a sharp spurt the past few days. The Standard Oil Co. is closing on a large tonnage for a refinery in the West Indies and several oil companies are considering extensive tank car repairs. The Standard project for the West Indies will require about 6000 tons of plates, shapes and bars, most of which is reported placed.

Philadelphia—Production of steel plates is expanding in this area, reflecting heavier releases. Railroad and ship tonnage is moving ahead of schedule as a precaution in case of a strike of steel workers.

Contracts Placed

890 tons, eight tanks, Carbide & Carbon Chemical Corp., Whiting, Ind., to McClintic-Marshall Corp., Bethlehem, Pa.

750 tons, repairs to 20 Carnegie Steel Co. coal barges, to American Bridge Co., Pittsburgh.

450 tons, irrigation work, Rio Grande conservation district, Alburquerque, N. Mex., to Wyatt Metal & Boiler Works, Dallas, Tex.

300 tons, storage tanks, Crown Central Petroleum Corp., Houston, Tex., to Wyatt Metal & Boiler Works, Dallas, Tex.

100 tons, dump bodies, garbage department, Sacramento, Calif., to unnamed interest.

100 tons, tanks, Waynesboro, Va., to Western Gas Construction Co., Ft. Wayne, Ind.

Contracts Pending

1500 tons, 20 to 30-inch welded pipe, East bay municipal utility district, Oakland, Calif.; Steel Tank & Pipe Co., Berkeley, Calif., low.

139 tons, Norfolk, Va., navy yard, schedule 735; bids soon.

100 tons, boiler for San Joaquin county hospital, Stockton, Calif.; bids opened.

Unstated tonnage, water tank, Clear Spring, Md., Chicago Bridge & Iron Works, Chicago, low, $5300.

Unstated tonnage, 500,000-gallon elevated water tower, Two Rivers, Wis.; bids June 7.

Sheets

Sheet Prices, Page 56

Pittsburgh—For the second consecutive week, operations in the sheet industry here hold at between 65 to 70 per cent, present schedules being maintained by a well diversified list of orders. Sellers have opened books for the third quarter at the following prices, Pittsburgh base: black sheets, 2.65c; galvanized, 3.25c; No. 10 hot-rolled 2.00c; No. 20 cold-rolled 3.15c; and No. 10 cold-rolled, 2.55c.

Cleveland—Most of the large sheet consumers, including leading automobile manufacturers, specified 75 to 80 per cent of the sheet tonnage due them on May contract quotas. Producers still are confident that shipments in June will exceed those of May by a considerable margin, in completion of second quarter obligations. Specifications from automobile interests last week again increased moderately, strengthening mill backlogs for this month and its improving operating schedules. Books were opened June 1 for third quarter on the basis of the new prices. A few sales have been booked at these prices for prompt shipment

to consumers who failed to cover all their second quarter requirements.

Chicago—With backlogs heavy, some sheet mills are sold up for the balance of this quarter. Shipments to most major consuming industries are well maintained and deliveries are being pushed in some instances because of the possibility of a cessation of operations later this month on account of the proposed strike. Sheet requirements of some automotive plants continue heavy, although the tendency in total consumption is downward slightly. Third quarter sheet prices are expected to continue at current levels.

Boston—Sheet specifications have eased off. Demand is well diversified and carload shipments are frequent.

New York—Sheet mills can still book a little more tonnage for June and are centering their efforts on getting specifications in immediately. Prices generally are being extended into third quarter.

Philadelphia — Specifications are heavier than a week ago, with most producers still able to take some additional tonnage. Strike threats probably have stimulated more activity in sheets than in any other products. One of the larger manufacturing consumers in this district not only has specified to the limit of contracts, but has bought additional tonnage at the current higher prices.

Buffalo — Buffalo district sheet mills continue to operate at 85 to 90 per cent. This rate will be continued throughout most of this month, barring labor troubles.

Youngstown, O.—Sheet consumers in the Youngstown district will benefit considerably by the new steel code, which sets up a Pittsburgh differential of 7½ cents per 100 pounds on sheets and strip for this district, compared with a former differential ranging from 11½ to 14 cents.

Cincinnati—Specifications on second quarter contracts for sheets are heavier, possibly due to desire of consumers to accumulate stocks. Production at close to 60 per cent throughout June is indicated by backlogs.

Cold Finished

Cold Finished Prices, Page 57

Pittsburgh—Third quarter books on carbon cold-finished steel bars have been opened at prices unchanged from second quarter, 2.10c base, Pittsburgh; 2.15c, Cleveland and Chicago; 2.20c, Buffalo; 2.30c, Detroit; and 2.35c, eastern Michigan. Prices on turned and ground shafting also continue unchanged. It was generally expected recently that cold-finished bars would be advanced $3 a ton.

Philadelphia—Cold-finished steel bar price of 2.10c, Pittsburgh, will be extended into third quarter it is understood here, instead of an advance, as had been expected by some observers.

Railroads

Track Material Prices, Page 57

Relatively little buying of steel is being done by railroads as their needs for the most part have been covered for the present. Rail mills are working at backlogs, those in the Buffalo district producing about 25,000 tons in May while those in the Pittsburgh district are operating steadily at about 5000 tons per week Chicago rail mills are about 40 per cent of capacity.

The Nickel Plate has distributed about 1100 tons of track fastenings among a number of makers. Shipments of track accessories are steady and in good volume on previous orders. Prices have not been changed.

Several oil companies are preparing to launch a substantial program of repairs on oil tank cars. Detroit, Toledo & Ironton is inquiring for 15 bulk cement cars of 50 tons capacity.

Domestic freight car awards in May involve 717 cars, of which 500 were for the Chicago Great Western and 200 for the Central of Georgia. This compares with 800 in April, 30 in March, 19,725 in February and 152 in January. May awards bring the total for the first five months to 21,424. This is the largest five-month total since 1930 when 31,606 cars were bought. In 1929 the total cars bought was 56,930 in the first five months.

	1934	1933	1932	1931
Jan.	152	3	159	100
Feb.	19,725	0	35	50
March	30	5	105	2,166
April	800	50	0	2,798
May	717	8	60	20
5 mo.	21,424	66	359	5,135
June		500	0	1,910
July		306	25	617
Aug.		202	5	1,304
Sept.		23	1,298	703
Oct.		514	0	980
Nov.		533	2	35
Dec.		316	50	11
Total		2,460	1,739	10,694

Car Orders Placed

New York, New Haven & Hartford, lightweight, streamlined train, three articulated cars, with a diesel-electric power plant at either end, to Goodyear-Zeppelin Corp., Akron, O.

Car Orders Pending

Detroit, Toledo & Ironton, 15 bulk cement cars, 50 tons capacity; inquiry expected soon.

Pennsylvania Water & Power Co., Baltimore, two transformer cars, 110 and 160 tons capacity; bids asked.

Rail Orders Pending

Panama Canal office, Washington, 1450 gross tons, rails, angle bars, frogs, switches and guard rail.

Pipe

Pipe Prices, Page 57

Pittsburgh — Shipments against second-quarter contracts still are the heaviest in some months with movement of this nature in oil country material outstanding. For miscellaneous railroad repair work boiler tube specifications have been good and the automotive industry's buying of mechanical tubing is still at a fare rate. Pipe prices hold unchanged with the exception of the new detailed method of quoting boiler tubes, which is now in effect.

Chicago—Pipe producers anticipate the release of considerable business now pending during the next two months. Political considerations may have an influence in speeding work during late summer and early fall, and with a large tonnage involved in projects on which bids have been taken or are to be received soon, prospects still are favorable for good activity for the balance of the year.

Boston—Cast pipe buying is in small lots although a fair volume is coming out with government financing, including several inquiries of 500 tons and under. Small steel merchant pipe has picked up due to miscellaneous building.

New York—Contracts for the New York city water tunnel shaft No. 2, one of the first projects to be undertaken with PWA loans, close June 11, involving about 7000 tons of pipe, valves, gates and other mechanical equipment.

Cast Pipe Placed

3744 tons, 12-inch, class 150, Los Angeles, allocated as follows: 1172 tons to United States Pipe & Foundry Co., Burlington, N. J.; 1172 tons to American Cast Iron Pipe Co., Birmingham, Ala.; and 1400 tons to National Cast Iron Pipe Co., Birmingham, Ala.

340 tons, 8-inch and under, Newton, Mass., to R. D. Wood & Co., Philadelphia.

330 tons, 10-inch, Salem, Va., to Lynch-

burg Foundry Co., Lynchburg, Va.
100 tons, 6 and 8-inch, Pullman and Walla Walla, Wash., to American Cast Iron Pipe Co., Birmingham, Ala.

Cast Pipe Pending

9300 tons, 6 to 16-inch, class 150, San Francisco, proposal 1204; bids opened.
7000 tons, including valves, gates and other mechanical equipment, water tunnel shaft No. 2, New York; bids June 11.
475 tons, 8-inch, Bethlehem, N. H.
280 tons, 2 to 14-inch, class 150, Carlin, Nev.; bids opened.
275 tons, 8-inch and under, also 60,000-gallon elevated steel tank, Warsaw, Ky.; bids June 7, Herman Drees, mayor.
163 tons, 6-inch, class 150, Gladstone, Mont.; bids June 5.
145 tons, 24 and 30-inch, class B, Long Beach, Calif.; bids opened.
Unstated tonnage, 12 and 14-inch, for waterworks extension, Two Rivers, Wis.; bids June 7.

Strip Steel

Strip Prices, Page 57

Pittsburgh—Prices of 2.00c, Pittsburgh, on hot-rolled strip and 2.80c, Pittsburgh or Cleveland, on cold-rolled strip, are being extended into early third quarter, at least, with some test expected when quarterly contracts are renewed. Specifications against expiring second quarter contracts still are heavy and shipments on some full-finished items of strip steel can not be promised in much less than two weeks.

Cleveland—Some sellers here report cancellations of as much as 25 per cent of the tonnage due consumers on contracts in May. This was caused mainly by the sharp drop in specifications from the automotive industry in the middle of the month, though releases from this source for June shipment are improving moderately.

Chicago—Although the tendency in strip specifications and shipments recently has been downward, activity has been aided slightly by orders in anticipation of a strike this month. Consumption in the automotive and miscellaneous industries has been holding fairly well but is off slightly from the rate a month ago. Hot-rolled strip is expected to continue next quarter at 2.10c, Chicago, with cold-rolled strip 2.80c, Pittsburgh-Cleveland.

Boston—While strip specifications have declined substantially, backlogs by most mills assure high operation through the remainder of the quarter.

New York—Sellers of steel strip are virtually out of the market except on narrow strip, which is being released slowly.

STRENGTH . . . *like this*

THE ENTIRE WEIGHT OF A 150-LB. MAN *is shown supported by a porcelain hanger-block clamped between two special shapes of Armstrong's EF brick.*

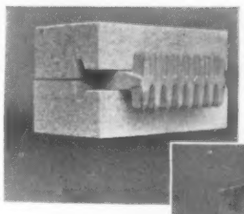
. . . is but one of the important advantages of EF BRICK

•

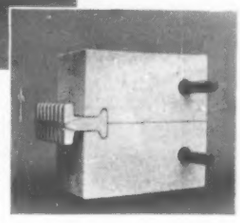
"HOW much weight can these semi-refractory brick bear?" That's an important question to engineers. And the picture above gives the answer! The load sustained is far greater than these brick would ever be required to support in actual service.

Armstrong's EF Insulating Brick have a crushing strength of 341 pounds per square inch at room temperature; 581 pounds per square inch at 1800° F.; 483 pounds per square inch at 2100° F.; and 203 pounds per square inch at 2500° F.

But these semi-refractory brick offer more than just strength. Except where extreme abrasion or where slagging action is present, no fire brick are required. This means lighter walls, shorter heating time, speedier production. EF Brick are available in all 9" shapes and in special shapes to order. Write for complete data to Armstrong Cork & Insulation Co., 985 Concord Street, Lancaster, Pa.



How a standard 9" x 4½" x 2½" Armstrong's EF Brick can be cut to hold an electric heating element hanger-block.



For flat arch construction, EF Brick can be suspended by means of pins through the ends of the brick.

Armstrong's

HIGH TEMPERATURE PRODUCTS

Armstrong's . . EF . . Nonpareil Brick

Shapes

Structural Shape Prices, Page 56

Pittsburgh—Over 1000 tons of fabricated structural steel in four Pennsylvania state highway bridges go in for bids June 15. United Engineering & Foundry Co. has been drawing plans and expects to take bids soon on the mill building for Ford Motor Co. to house its new strip mill. Bids on 5000 tons of structural steel for the proposed Struthers, O., strip mill of the Youngstown Sheet & Tube Co., have been received but no definite award had been made. Plain structural shapes continue 1.85c, Pittsburgh. It was recently reported that the $3 a ton advance in steel sheet piling would become effective May 25. Instead, the effective date is June 11.

Cleveland—Erie railroad has awarded 730 tons for a bridge at Allegany, N. Y., and 250 tons for a bridge at Hamburg, N. Y., these tonnages being the largest placed here during the week. The Ohio state highway commissioin, Columbus, is taking bids June 6 on 650 tons for a highway bridge in Pike county. The general market in this vicinity is quiet.

Chicago—Structural awards still are made up of small individual lots. About 1500 tons are pending for various Illinois state bridges on which bids have been opened, with additional bridges scheduled to come up for bids in this and nearby states in the near future, this work being sponsored by PWA funds. Plans are awaited for a new pavilion in the stock yards district, while other construction will be required there to replace structures destroyed in the recent fire.

Boston—While some work is held up, structural tonnage figured recently is fairly large. PWA projects are beginning to bring out bids for materials.

New York—Awards are light and a conservative estimate places less than 5000 tons active in this district. Indications are, however, that improvement will be noted this month, as considerable work is due to come out for the city of New York, and the New York Central railroad.

Philadelphia—Opening of bids on 3300 tons of structural shapes, and 1500 tons of piling for high-speed line bridge work at Camden, N. J., is the outstanding feature in the market here. Aside from this, and 1300 tons of shapes for four Pennsylvania state bridges on which bids are to be opened June 15, little new tonnage is pending.

Shape Contracts Placed

1100 tons, buildings at state reformatory, Elmira, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.; through Agostine Bros.

730 tons, bridge for Erie railroad, Allegany, N. Y., to Jones & Laughlin Steel Corp., Pittsburgh.

625 tons, underpass, Center street, Pocatello, Idaho, to American Bridge Co., Pittsburgh.

565 tons, chemistry building, Howard university, Washington, to Lehigh Structural Steel Co., Allentown, Pa.

550 tons, bridge, Dan river, Danville, Va., to Virginia Bridge & Iron Co., Roanoke, Va.

420 tons, brewery addition, Detroit, for Eckard & Becker Brewing Co., to Whitehead & Kales Co., Detroit.

400 tons, including 75 tons of reinforcing bars, state bridge, Okfuskee county, Oklahoma, to J. B. Klein Iron & Foundry Co., Oklahoma City; J. W. Hopper, Oklahoma City, general contractor.

400 tons, bridge, Worland, Wyo., to Minneapolis-Moline Power Implement Co., Minneapolis.

337 tons, Boeuf river and approaches, Caldwell-Franklin parishes, Louisiana, to Jones & Laughlin Steel Corp., Pittsburgh; Forcum Jones Co., Dyersburg, Tenn., general contractor.

300 tons, Ss. Peter's and Paul's church, lea, Md., to McClintic-Marshall Corp., Bethlehem, Pa.

300 tons, St. Peter's and Paul's church, Lewiston, Me., to Lyons Iron Works, Manchester, N. H.

250 tons, bridge for Erie railroad, Hamburg, N. Y., to American Bridge Co., Pittsburgh.

245 tons, I-beam spans, Adams county, Nebraska, to American Bridge Co., Pittsburgh.

240 tons, bridges on highway No. 57, Hatchie river, Hardeman county, Tennessee, to Virginia Bridge & Iron Co., Roanoke, Va.; Forcum Jones Co., Dyersburg, Tenn., general contractor.

229 tons, bridges, highway No. 71, Sevier county, Arkansas, to Arkansas Foundry Co., Little Rock, Ark.; including 82 tons of bars. D. P. Jones Construction Co. Inc., Little Rock, general contractor.

225 tons, bridge, New Albin, Iowa, to Vierling Steel Works, Chicago.

225 tons, bridge, Pulaski county, Arkansas, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

225 tons, science building, Wellesley college, Wellesley, Mass., to Lehigh Structural Steel Co., Buffalo.

225 tons, bridge, Porter county, Indiana, to Midland Structural Steel Co., Chicago.

200 tons, Sears, Roebuck & Co. store building, Chicago, to Wendnagel & Co., Chicago.

185 tons, highway, Lexington-Lincoln, Mass., to Northern Steel Co., Boston; B. Perini & Sons, Framingham, Mass., general contractor.

175 tons, school buildings, Cedar Rapids, Iowa, to Joseph T. Ryerson & Son Inc., Chicago.

175 tons, piling, for bridge work in Maumee river at Toledo, O., for New York Central railroad, to Carnegie Steel Co., Pittsbugh.

160 tons, plant for Kingsland Granite Co., Madera, Calif., to International Steel Co., Evansville, Ind.

150 tons, state bridge, Peoria, Ill., to Wendnagel & Co., Chicago; Stobel Steel Construction Co., Chicago, general contractor.

135 tons, steel stairways, specification 611-D, Boulder dam, Boulder City, Nev., to unnamed interest.

125 tons, school building, Muncie, Ind., to Reuter Bros., Chicago.

120 tons, state highway bridge repairs, Parkersburg, W. Va., to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, Elm creek bridge, highway No. 4, Collingsworth, Tex., shapes and bars to Austin Bros. Structural Steel Co., Dallas, and Mosher Steel Co., Dallas; W. S. Crawford & Co., Dallas, general contractor.

100 tons, two steel derricks, Shell Oil Co., Los Angeles, to Emsco Derrick & Equipment Co., Los Angeles.

100 tons, two steel derricks, Fullerton Oil Co., Los Angeles, to unnamed interest.

100 tons, girl's high school, San Francisco, to Schrader's Iron Works, San Francisco.

Shape Awards Compared

	Tons
Week ended June 2	**9,436**
Week ended May 26	**14,285**
Week ended May 19	**17,178**
This week in 1933	**11,100**
Weekly average for 1933	**15,413**
Weekly average, 1934	**17,024**
Weekly average, May	**19,866**
Total to date, 1933	**349,168**
Total to date, 1934	**391,559**

Shape Contracts Pending

2450 tons, main spillway dam at Bonneville, Oreg.; Columbia Construction Co., Reno, Nev., low.

1000 tons, viaduct for New York Central railroad, Hoboken-Weehawken, N. Y.; George A. Fuller Co., New York, low.

750 tons, state highway bridges, Iowa.

746 tons, 1400-foot 6-span structural steel bridge, Middletown township, Bucks county, Pennsylvania; bids to state department of highways, Harrisburg, Pa., June 15.

700 tons, state bridge, Melrose park, Ill.; E. J. Albright Co., Chicago, low for general contract.

650 tons, highway bridge in Pike county, O., for Ohio highway commission, Columbus, O.; bids June 6.

580 tons, two state highway bridges, Lexington and Boston, Ky.

390 tons, bridge over Pennsylvania railroad tracks, St. Denis, Md., for Baltimore & Ohio railroad.

220 tons, state bridge, Sag, Cook county, Illinois; John Kinnare Inc., Chicago, low on general contract.

200 tons, bridge at unstated locations in Colorado, for United States bureau of public roads, Washington.

175 tons, swing-span for United States government at Conway, S. C.

157 tons, 3-track deck plate girder overhead bridge, Middletown township, Bucks county, Pennsylvania; bids to state department of highways, Harrisburgh, Pa., June 15; included 62 tons

of plain steel bars and 8 tons of reinforcing frames.

147 tons, pony truss bridge, Clymer borough, Indiana county, Pennsylvania; bids to state department of highways, Harrisburg, Pa., June 15; included 34 tons of plain steel bars.

125 tons, state highway bridge, Idaho Falls, Idaho.

110 tons, shapes and bars, plate girder and reinforced concrete beam overhead bridge, Chambersburg borough, Franklin county, Pennsylvania; 67 tons of fabricated structural steel and 43 tons of plain steel bars; bids to state department of highways, Harrisburg, Pa., June 15.

100 tons, postoffice, Malone, N. Y.; M. C. Ryan Co., Schenectady, N. Y., low.

Unstated tonnage, 39 small bridges, fabrication only, for department of agriculture, Washington, schedule 6622; Ingalls Iron Co., Birmingham, low at $19,235.

Unstated, cranes for navy yard at Puget Sound, Wash.; Harnischfeger Sales Corp., Milwaukee, low.

Unstated tonnage, pavilion, Union Stock Yards Co., Chicago; plans awaited.

Reinforcing

Reinforcing Bar Prices, Page 57

Pittsburgh—A Pennsylvania state highway letting for June 15 calls for 275 tons of plain steel bars. New billet steel bars are unchanged at 2.05c, Pittsburgh, for cut lengths, and rail steel bars for reinforcing are 1.90c base, Pittsburgh.

Cleveland — Small, miscellaneous lots constitute the bulk of concrete bar purchases here, with an unsatisfactory volume. At Columbus, approximately 500 tons have been awarded to three sellers for sections of the municipal sewer project which will take a total of 3000 tons.

Chicago—New business in reinforcing bars continues light. Several large lots are pending for public work sponsored by PWA funds, but new inquiries are small. Another letting of bars for Illinois highways is scheduled for the near future, while additional road work is in prospect for nearby states. Private building is supplying but little bar business. Billet steel reinforcing bars continue 2.10c, with rail steel 1.95c.

New York—State highway work and bridges in New Jersey strengthen the reinforcing steel outlook. Awards are light, but considerable work has been figured. Cut length billet bars in the New York district are steady at 2.43c, New York.

Philadelphia—Reinforcing bar demand is dull, with prices unchanged. Bids have been opened on 415 tons for high-speed line bridge work at Camden, N. J., and bids will be taken June 15 on four Pennsylvania state bridges which will require 400 tons.

Boston—Several hundred tons of reinforcing bars have been placed for highway work. The aggregate volume taken by distributors has improved.

Concrete Awards Compared

	Tons
Week ended June 2	2,150
Week ended May 26	3,257
Week ended May 19	7,291
This week in 1933	742
Weekly average for 1933	3,771
Weekly average, 1934	4,772
Weekly average, May	4,633
Total to date, 1933	68,521
Total to date, 1934	109,766

Reinforcing Steel Awards

1000 tons, road work and bridges for Oklahoma highway commission, to Tulsa Rolling Mills Co., Tulsa, Okla.

506 tons, sewer for Columbus, O.; part of 3000-ton project; 106 tons of new

NEW FLOORS *for* OLD!

If your old floor—whatever type it may be—is worn, untidy, unsafe—RELAY it. Eliminate the "tough spots" in your plant by using—

"AW" DIAMONDETTE STEEL FLOORS

They will render safe, sanitary and secure service for years to come. ◆ Little installation work is involved—minor delays—the cost is considerate and the result satisfying.

SLIP PROOF • OIL PROOF • HEAT PROOF
CRACK PROOF • SAFE • SIGHTLY
SELF DRAINING • SPLINTERLESS

108 Years' Iron and Steel Making Experience

ALAN WOOD STEEL COMPANY

CONSHOHOCKEN, PA.

Branch Offices—Philadelphia—New York—Seattle
Los Angeles—San Francisco—Houston—Boston

billet steel bars to Kalman Steel Corp., Bethlehem, Pa.; 150 tons to Pollak Steel Co., Cincinnati, and 250 tons to Ben-Tom Supply Co., Columbus, O.

398 tons, two bridges, Gaffey street, Los Angeles, to unnamed interest.

283 tons, dormitories, Texas Technological college, Lubbuck, Tex., part to Missouri Rolling Mills, St. Louis, and part to Texas Steel Co., Fort Worth, Tex. Anderson Iron Works, Fort Worth, awarded 30 tons of structural steel, W. S. Bellows Construction Co., Oklahoma City, Okla., general contractor.

176 tons, specification 21,306-A, Boulder dam, Boulder City, Nev., to unnamed interest.

175 tons, 14-story annex for Humble Oil & Refining Co., building, Houston, Tex., to Peden Iron & Steel Co., Houston; American Construction Co., Houston, general contractor.

175 tons, highway, Arlington-Belmont-Lexington, Mass., to Concrete Steel Co., Boston; George A. Fuller, Boston, contractor.

150 tons, sewer, Westchester county, New York, to Concrete Steel Co., New York, through George Flinn Co.

140 tons, two state bridges in Idaho, to unnamed interest.

122 tons, reservoir, Pocatello, Idaho, to unnamed interest.

100 tons, tunnel station bridge, Los Angeles county, California, to unnamed interest.

100 tons, alterations, Excelsior high school, Norwalk, Calif., to unnamed interest.

Reinforcing Steel Pending

6000 tons, main spillway dam at Bonneville, Oreg.; Columbia Construction Co., Reno, Nev., low.

2210 tons, Broadway tunnel, Oakland, Calif.; Six Companies, San Francisco, low for general contract.

700 tons, mesh, state highway work in New York, mainly in Suffolk county.

460 tons, East bay municipal utility district, Oakland, Calif.; bids rejected and district will buy by carload as needed.

201 tons, highway work, Union county, New Jersey; bids June 18.

200 tons, state highway work in New York; bids June 15.

200 tons, terminal building, foot of Fourteenth street, Oakland, Calif., for port commission; K. E. Parker, San Francisco, low for general contract.

ONE STEP *from Your Train*
TWO STEPS *from Anywhere*

● When you get off your train in Cleveland's Union Terminal, say "Hotel Cleveland" to the redcap—and you're in the lobby in a moment—no time or taxi fare needed.

At this Hotel, all Cleveland is at your doorstep. Whether you come for business or pleasure, you are nearer more of the places you'll want to see than you would be in any other hotel.

But convenience isn't all you find here. The food is exceptional. Prices of everything are moderate. Furnishings are luxurious. And there's something that's hard to define—an atmosphere, a friendliness, a genuine interest in your comfort . . . it never appears on the bill, but it's worth a lot to any man or woman away from home.

● *Reached by covered passage from Cleveland's Union Passenger Terminal. Room rates from $2.50 for one, $4 for two.*

HOTEL CLEVELAND *Cleveland*

Wire

Wire Prices, Page 57

Pittsburgh — Wire specifications against second quarter contracts continue heavy. However, for the early third quarter at least, no change is expected from the present spot market of $2.60 per keg in carload lots, Pittsburgh or Cleveland, for nails, 2.30c for plain wire, and 2.45c on fence wire.

Cleveland—Consumers' desire to be protected in the event of a steel strike led them to place a considerable number of orders for wire products during the week. On the other hand, many buyers held back specifications, or actually suspended shipments on specifications previously issued, believing that prices might be affected in their favor under the new steel code. Tonnage released to leading producers showed little change from the preceding week. Books were opened June 1 for third quarter at current open market quotations.

Chicago—Wire specifications and shipments are fairly heavy. Possibility of plant shut-downs because of strikes this month is seen as stimulating specifications, particularly from consumers in definite need of material. Consumption in the automotive industry is declining but wire shipments are fairly well maintained.

Boston—Wire specifications are spotty. Production, especially in rope and specialties, is high.

Philadelphia—Manufacturers are

specifying freely for wire products but jobbers show little interest. Releases are somewhat lighter than a week ago.

Pig Iron

Pig Iron Prices, Page 58

Pittsburgh—With assurance that prices will not be increased further for third quarter, melters have little incentive to buy speculatively over the balance of June. The market of $18 on basic, $18.50 for foundry grades and $19 for bessemer, Neville Island base, however, does become effective on all shipments after July 1, this in effect being a price advance because pig iron shipments now are virtually all on obligations placed before mid-April. Both merchant furnaces in the district still are in blast with about a month to six weeks backlog at hand.

Cleveland—Further gains were noted last week in shipments by furnace interests here. Producers feel confident that the movement of iron in June will exceed that of the past month as melters appear reluctant to lose their equity in tonnage that was contracted for at $1 a ton less than the present market. Increased production costs are a strong factor. Books were opened June 1 for third quarter, with prices incorporating the recent $1 a ton advance.

Chicago—Specifications for June shipments against outstanding pig iron contracts are being received in fairly large volume and a heavy movement is in prospect for this month. May shipments were about 15 per cent heavier than those of April and were the largest for any month to date. Foundry operations show some decrease, although the letdown has been only slight. Pig iron continues $18.50, furnace, for No. 2 foundry and malleable, which price will apply on third quarter business.

Boston—Shipments are largely in small lots against contracts. New buying is unimportant. The New England furnace, with low and unbalanced stocks, is down for relining.

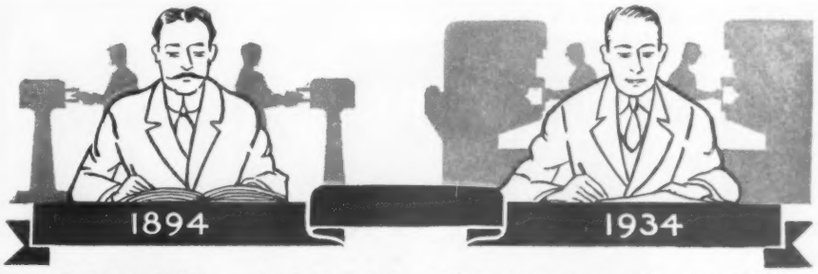
New York—While pig iron sellers are opening their books for the third quarter, attention at the moment is being focused on specifications against current contracts. These specifications this month are expected to be well in excess of those for either of the two preceding months. Current prices for new business are being extended.

Philadelphia—Despite the lack of new buying, shipments of pig iron are heavier. The movement in June will probably be the heaviest for any month of the second quarter.

Buffalo—Third quarter pig iron prices have been announced and followed the forecast of no change from the higher levels established May 1. May shipments showed gains of 75 to 100 per cent over April, some of the leading shippers here report, but fell slightly below the record totals reached last December. Seven blast furnaces continue in production in this district, the highest rate of output in four years.

Under the new steel code Buffalo has been made a basing point for silvery and bessemer ferrosilicon irons, and prices $1.25 higher than from Jackson, O., have been filed.

Cincinnati—Pig iron prices for third quarter were reaffirmed as books were opened June 1. No. 2



THOMSON PROCESS ELECTRIC WELDERS

HELPED *Recover* IN 1894

In 1886 Elihu Thomson invented the Thomson Process, the art of joining metals by electrical resistance. Since then, the company which he founded has continued to lead in the development and application of the Thomson Process

During the industrial set-back of 1892-94, many metal working industries took advantage of the newly invented Thomson Process of resistance welding to reduce their costs and improve their products.

Since then, Thomson-Gibb has developed the Thomson Process, eliminating nearly every restriction of size, shape or material. Today, there is a greater opportuntiy to weld your product on a production scale and to use the advantages of lower cost and improved design to stimulate lazy markets.

If you join metals by any method, there is an excellent chance that Thomson-Gibb has electric welding equipment that will join them better, faster or cheaper. To find out, simply fill in the memo below and mail it attached to your letterhead.

THOMSON-GIBB ELECTRIC WELDING CO.

Thomson-Gibb Electric Welding Company
163 Pleasant Street, Lynn, Mass.

Gentlemen:

☐ Please ask your nearest engineer to arrange for an appointment at our plant.
☐ Please *mail* information on the welding of

Product..... Metal.....

Approximate dimensions.....

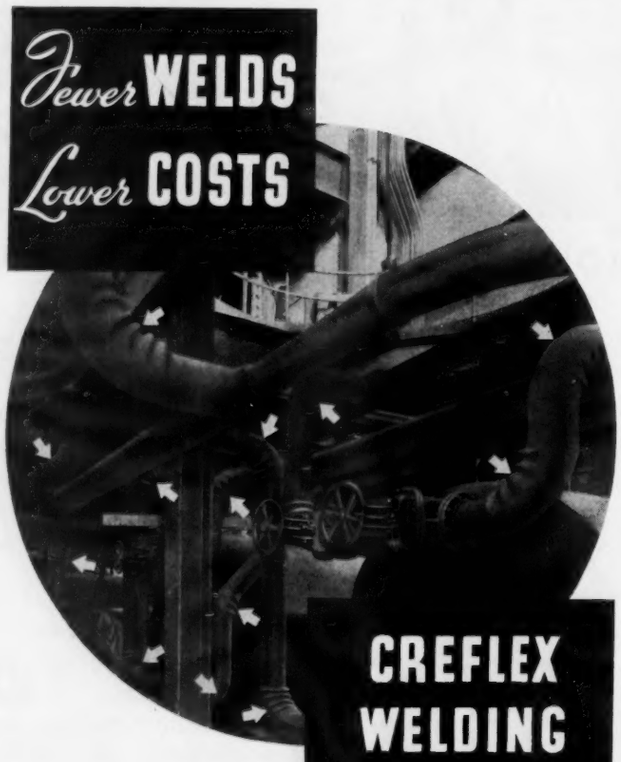
Desired production per hour 6051

foundry iron is $18.50, Hamilton furnace, with southern iron 38 cents less. Not much more than one-half of iron on second quarter contracts has been shipped in the past two months.

St. Louis—New buying is light, although the melt continues heavy, especially with foundries supplying the stove industry. Shipments against contracts are undiminished.

Birmingham, Ala.—Shipments and production continue steady, despite shutdowns at ore mines. Miners are asking 20 cents an hour increase in wages, one hour less work per day and recognition of the union. Conferences between company officials and union leaders have failed to bring about any agreement.

Toronto, Ont.—Demand is sustained, mainly for immediate needs of melters. Production is reported at about 1000 tons per day, mostly for basic iron for further use of producing companies. Stocks of foundry and malleable iron are heavy. Prices are unchanged.



CREFLEX WELDING FITTINGS have a number of distinctive advantages not possessed by other types of pipe fittings for welding.

For example, in the above photograph, 22 circumferential welds were eliminated by using CREFLEX WELDING FITTINGS with long tangents. RESULTS—lower installation costs.

Also longer tangents on CREFLEX WELDING FITTINGS removed all necessary welds far from zones of high stress and provided a higher factor of safety in the welds. RESULTS—stronger, safer pipe lines.

In four lines can be seen two or more CREFLEX WELDING FITTINGS incorporated in a single continuous length of pipe in more than one plane. No other type of welding fitting offers this feature. RESULT—greater ease and speed in lining up preparatory to welding.

Learn all the advantages of CREFLEX WELDING FITTINGS. Full information is contained in Bulletin W-101. Write for it today.

PITTSBURGH PIPING & EQUIPMENT CO.

43rd ST. & A. V. R. R. PITTSBURGH, PA.

BRANCH OFFICES: NEW YORK CHICAGO DETROIT BOSTON INDIANAPOLIS SAN FRANCISCO CLEVELAND HOUGHTON, MICH.

Scrap

Scrap Prices, Page 59

Pittsburgh—Because steel scrap melters still keep inventories low, there has been no break in the present dull market and although prices are nominally unchanged, it is problematical what buying might bring out. Although No. 1 heavy melting steel is considered for the time being at $11.75 to $12.25, distress carload sales were made last week at less. Machine shop turnings are quoted $7.50 to $8 and hydraulic compressed sheets $11.50 to $12. Although some railroads are withholding their June lists because of low prices, the Baltimore & Ohio railroad closes June 4 on 2000 tons of scrap rails, 1200 tons of heavy melting steel, 1500 tons of iron wheels and other items.

Cleveland—Prices of steel and iron scrap have declined further, heavy melting steel being quoted now at $9.50 to $10 and other steelmaking grades in proportion. Foundry and blast furnace scrap are holding better. Melters of steel are taking in contract shipments but are not making new commitments.

Chicago—Scrap prices are largely nominal but easier on the basis of bids on railroad material and on prices at which old material is available. Heavy melting steel is off $1 a ton at $9.50 to $10.00, with practically all other grades 50 cents to $1 a ton lower. Mills continue out of the market in view of uncertainty attached to future steelmaking operations.

Boston—Weakness continues in scrap, domestic consumers giving little support while demand for outside shipment is small. New England steel works consumers are running heavily on scrap, but in almost every instance have a large supply on hand.

New York—While export demand for scrap holds fairly active domestic demand is weak, few mills taking shipment. While the barge price for No. 1 and 2 steel is unchanged, weakness continues in other grades. The export demand is the only steadying influence.

Philadelphia—Further weakness is developing in steel and iron scrap with prices sagging on cheaper offerings, which are attracting little tonnage. Uncertainty over the labor situation is slowing purchases. One

large Pittsburgh consumer is asking dealers here to rush shipments on contracts, however.

Buffalo—Steelworks and other principal consumers of scrap have shut down on shipments. As a result some distress scrap is accumulating and is being sold at sacrifice prices. Dealers say these sales have not established a market but quote nominal prices $1 to $2 below those at which the best deals of the present quarter were made. There is no new inquiry or buying.

Detroit—Prices of steel and iron scrap have declined about 50 cents the past week, nearly all grades being involved. The market is weak and under threat of a steel strike observers believe lower levels will be reached.

Cincinnati—The threat of labor trouble has served to weaken scrap prices. Prices are lower and untested, excepting on occasional small sales. Steel grades are especially dull.

St. Louis—Scrap iron and steel are weak as a result of lack of buying. Contracts have been cleaned up by dealers, who are marking time until the mills resume buying. Some distress scrap has appeared on the market.

Birmingham, Ala.—Consumers of steel and iron scrap are buying in small lots and there is no inclination to accumulate stock.

Toronto, Ont.—Canadian iron and steel scrap markets were featureless the past week. Sales have dropped sharply as most consumers are well supplied. Prices show no change.

Warehouse

Warehouse Prices, Page 60

Cleveland—Warehouse sales here have tapered. Buyers appear anxious regarding the possibility of a strike in the iron and steel industry, but have not started to purchase more material on that account. Some warehouse interests' May sales in tonnage were 20 to 25 per cent less than in April, while others had a leaner month in March.

Chicago—While the number of orders showed a decrease during May from April, tonnage compared favorably with that of the preceding month. The downward tendency in demand was arrested during the last half of May.

New York—A greater volume of small orders will enable some of the larger warehouses to finish May ahead of June. A change in boiler tube prices is expected this week, with an advance in cold-finished likely soon.

Philadelphia — Warehouse steel trading is light. Some jobbers report May tonnage about equal to that of April and in a few cases an increase is indicated.

Detroit—The past week's sales from warehouse were adversely affected by the holiday, although May shipments of jobber steel equaled the April showing.

Cincinnati—Tonnage from warehouse was slightly higher during the past week, in spite of the holiday. Demand from industrial sources is equal to that of recent month.

Metallurgical Coke

Coke Prices, Page 57

Except for fairly steady demand for common grades of foundry coke, the beehive coke market is inactive. Prices are steady and unchanged at

TONNAGE

also

MOLTRUP PRODUCTS INCLUDE

Cold Drawn Steel in Rounds, Squares, Hexagons, Flats and Special Shapes

•

Turned and Polished Shafting

•

Free Cutting Screw Stock

•

Special Polished Rod

•

Machine Keys

•

Woodruff Keys

•

Taper Pins

•

Machine Racks

•

Foundry Pattern Plates, Core Plates, Flattened, Ground and Polished Steel Plates and Discs distinguished for their straightness, accuracy and fineness of finish.

Not only does Moltrup supply the finest of cold drawn sections but also has available ample stocks at the mills and in warehouse or jobber stocks of

Quality COLD DRAWN STEELS

in regular sizes and shapes for all requirements.

An Annual Capacity of 96,000 tons!

For regular stocks of accurately drawn cold finished steel there is a warehouse or jobber in your vicinity with ample supplies—*Consult your telephone directory.*

Also—When you need "Special" shapes—accurately drawn, true and exactly to form—to close limits eliminating costly machining—consult Moltrup.

Moltrup Steel Products Co.

BEAVER FALLS, PA.

(Pittsburgh District)

NEW YORK CHICAGO PHILADELPHIA CLEVELAND BOSTON
HOUSTON PITTSBURGH SAN FRANCISCO ATLANTA NORFOLK
SEATTLE DETROIT BUFFALO DAYTON ERIE

the following levels on a Connellsville oven basis: $3.85 for furnace coke; $4.60 for foundry; $5.35 for premium grades of foundry. An allowable deduction of 25 cents a ton still exists for yearly contracts for furnace coke only.

Foundry coke shipments at Chicago during May were about equal to those of April. Prices have been reaffirmed for June deliveries at $8.50, ovens, for outside delivery and $9.25, delivered Chicago.

By-product coke sales at Cincinnati in May were slightly below those of April. Production at Birmingham, Ala., is steady and prices are unchanged.

Iron Ore

Iron Ore Prices, Page 58

New York—Foreign iron ore prices are unchanged, but strong. Some foreign mines are oversold, and this is particularly noted in the case of one or two producers of North African low phosphorus, due mainly to substantial buying in Europe. Except possibly one large tonnage there is little new buying of foreign ores in this country. Most of the leading consumers are covered by contracts on which sizable shipments have been arriving over the past few weeks.

Cleveland—Some additional small sales of Lake Superior iron ore have been made in the open market at last year's prices which have been reaffirmed for the current season. A few consumers are postponing their purchases until July.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 57

Smaller needs for bolts, nuts and rivets is apparent, with lessened automotive demand and delay in specifications by railroad equipment builders. At Chicago railroad buying is substantially greater than a year ago but carbuilders are taking less than a short time ago. Jobber buying in the West has been light.

The volume of nut and bolt business booked in May by manufacturers at Cleveland held up much better than expected. While shipping orders from automobile manufacturers fell off during the latter part of the month, there were relatively few cancellations. Some announcement on prices for third quarter from the industry, which is not yet operating under a code, is expected early in June. Meanwhile, bolts and nuts are 70 off list and large rivets are 3.00c, Pittsburgh, and 3.10c, Chicago.

Tin Plate

Tin Plate Prices, Page 56

Pittsburgh—Despite the fact that canmakers' specifications for tin plate are irregular, the average of operations in the tin plate industry holds at 80 per cent. Uncertain conditions are caused by crop reports from the Midwest, which in turn may reduce tin mill operating rates shortly. Standard coke tin plate holds at $5.25, Pittsburgh, per base box, and tin mill sizes of black sheets 2.85c, Pittsburgh.

Semifinished

Semifinished Prices, Page 57

Semifinished steel shipments hold at a high rate and promise to do so for two to three more weeks. Most semifinished steel users are taking in stocks. The market is $30 for sheet bars, $29 for billets, and $38 for wire rods on all business not previously covered by contract.

Ferroalloys

Ferroalloy Prices, Page 58

Ferromanganese shipments are sustained at the recent rate, with some prospects for improvement. There is no indication yet as to whether there will be any change in the present prices of $85, duty paid, eastern seaboard, for third quarter. It is doubtful if definite action will be taken before June 20.

Coke By-Products

Coke By-Product Prices, Page 57

New York—Demand for toluol, benzol and xylol is active, with little spot material available. Prices are unchanged. Specifications against contracts for naphthalene also are active. Sulphate of ammonia is dull with a price change expected after the end of the month.

Quicksilver

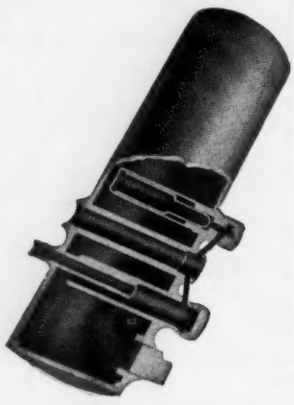
New York—Quicksilver continues unchanged in a dull market here,

One of 30,000 STAMPINGS

Produced by

CROSBY

Stamping Engineers



Since 1896 the Crosby plant has been devoted, exclusively, to designing and producing Sheet Metal Stampings. Avail yourself of this experience. Send us your next stamping problem and watch results.

Manufacturers IDEAL TROLLEY WHEELS

THE CROSBY COMPANY

BUFFALO, N. Y.

Branch Offices: **New York, Philadelphia, Pittsburgh, Cleveland, Detroit, Chicago.**

with small lots $75.50, a virgin flask of 76 pounds and round lots at $75 a flask.

Pacific Coast

Pacific Coast Prices, Page 57, 58, 60

San Francisco—(*By Air Mail*)—Featuring the market last week was the award of the largest cast iron pipe tonnage of the year, 3744 tons of 12-inch pipe for Los Angeles, allocated as follows: 1172 tons each to United States Pipe & Foundry Co. and American Cast Iron Pipe Co., and 1400 tons to National Cast Iron Pipe Co.

Unnamed interests booked 398 tons of reinforcing bars for two bridges on Gaffey street, Los Angeles, 176 tons for Boulder dam, Boulder City, Nev., and 140 tons for a reservoir at Pocatello, Idaho. Six Companies Inc., San Francisco, is low on the general contract for the Broadway tunnel, Oakland, Calif., involving 2210 tons. The east bay municipal utility district, Oakland, Calif., rejected bids on 460 tons and will buy carload lots as needed.

Steel Tank & Pipe Co., Berkeley, Calif., is low on 1500 tons of 20 and 30-inch welded pipe for Oakland, Calif. Bids have been opened on 100 tons of plates for a boiler for the San Joaquin county hospital, Stockton, Calif.

International Steel Co., Evansville, Ind., took 160 tons of structural shapes for a plant at Madera, Calif., for Kingsland Granite Co. Specification 611-D, Boulder dam, Boulder City, Nev., involving 135 tons for stairways, was awarded to unnamed interests. Schrader Iron Works secured 100 tons for a high school in San Francisco.

Municipalities are beginning to come into the market for annual cast iron pipe requirements. San Francisco has opened bids on 9300 tons, the largest inquiry so far this year. Bids have been opened on 280 tons of 2 to 14-inch pipe for Carlin, Nev., and on 145 tons of 24 and 30-inch pipe for Long Beach, Calif.

Water Shipments Cease

Seattle—Opening of bids for the main Bonneville spillway dam May 25 brought four tenders, the lowest that of the Columbia Construction Co., Reno, Nev., $8,972,650. The engineers' estimate was $7,893,192.

General business conditions in the Pacific Northwest have been noticeably slowed by the strike of longshoremen and seamen, as deep water transportation is paralyzed, affecting all branches of the iron and steel trades.

While some steel tonnages are pending no new projects of note have developed lately. Harnischfeger Sales Corp., Milwaukee, is low at $44,420 for cranes for the Puget Sound navy yard, tonnage unstated. American Cast Iron Pipe Co., Birmingham, Ala., has booked 100 tons of 6 and 8-inch pipe for Pullman and Walla Walla, Wash., and a Seattle suburban district. Snohomish, Wash., expects to call bids about June 15 for the $200,000 Pilchuck gravity water system. Lewis county, Washington, will open bids June 12 at Chehalis for a 151-foot steel bridge, plans by C. E. Neville, engineer. Spokane has awarded $30,000 in water job equipment contracts to Hughes & Co., Spokane, and Crane Co.

Additional contracts for the Fort Peck, Mont., project have been awarded by army engineers as follows: Water filter plant and intake G. J. Ellefald Construction Co., Forest City, Iowa, $162,857; cast steel spuds, General Steel Casting Corp., Eddystone, Pa., $45,630.

Jobbers are marking time due to the water tieup, business being confined to local demand and a few government orders. When steamer service is restored there will be a rush of accumulated orders. Prices are firm.

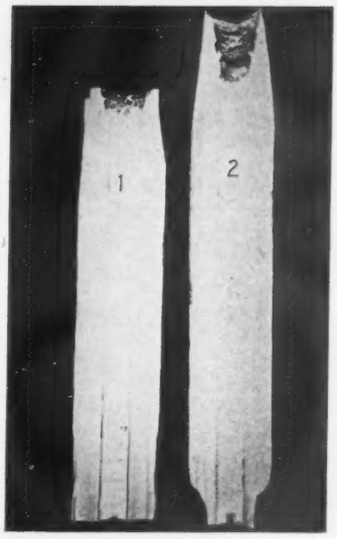
Strike conditions have retarded scrap buying by Japan but prices have not declined. About 3000 tons of steel scrap, sold to the Orient, is lying on freight cars in this vicinity awaiting steamer space.

Steel in Europe

Foreign Steel Prices, Page 60

London—(*By Cable*)—Pospects in the steel and iron industry in Great Britain are generally regarded as favorable and prices are firm. Orders for semifinished steel are becoming lighter; demand for sheets is dull. Stocks of pig iron have been seriously reduced. Exports are expanding slightly but remain below expectations. Light foundries are working full time. Makers of tin

Let LIQUITOL Reduce YOUR INGOT COSTS



(1) Is treated with LIQUITOL A SPECIAL, the fluid metal is only poured to half of the head. The formation of the hole is such that the ingot is quite solid. The savings in 16 of these ingots is 1 ingot. This is only used for refined steel, that is to say, tool steel, cutting steel, and special steels of high quality.

Liquitol is a scientifically prepared product resulting in sound Steel or Iron Castings. It retards cooling of hot top metal. Cavities and porosities practically eliminated.

Does not injure or affect physical or analytical properties of steel or cast iron.

Made in 4 grades for 4 purposes.

Ask for detailed bulletin AL-16-A.

THE ALPHA-LUX COMPANY, INC.

192 Front St.,
NEW YORK CITY

Branches

Philadelphia Chicago

plate find foreign competition is strong.

The Continent reports the export outlook shows improvement although still below normal. British rerollers are buying semifinished steel and wire rods from makers on the Continent. Demand from Scandinavia is expanding. Berlin reports better demand from the Balkan states.

Nonferrous Metals

Nonferrous Metal Prices, Page 58, 59

New York—Easiness developed in zinc and tin but other leading nonferrous metals showed little or no change. Consumers placed only moderate commitments.

Copper — Complicated problems arising under the copper code are affecting sentiment in the market but to date no change has appeared in domestic prices. Some producers still are awaiting sales quotas. Consumers apparently are awaiting a clearer outlook for industry in general and copper in particular before placing tonnage orders. Copper scrap has been weak with dealers finding it difficult to move accumulations.

Zinc—Continued heavy production of ore in the Tri-State field has depressed the market not only for the ore but for refined metal. Prime western now is available at $1 a ton under recent levels.

Lead—Sales have been moderate with sheet and pipe makers, corroders and battery makers the chief buyers. Sales for May topped 31,000 tons and were the heaviest for any month this year. The lead code goes into effect June 4, but does not provide for price filing.

Tin—Straits metal had dropped to 52.37½c by the close of the week despite a decline in world supplies in May to the lowest level in years. Sterling exchange rates have been lower and the London market has eased somewhat. The trade is watching closely the strike threat in the steel industry.

Antimony—Demand was slow and prices easier with spot at 8.25c, duty paid.

Aluminum—Secondary metal was in slower demand. Prices declined ½-cent.

New Prices Filed With Institute

LOWEST base prices for the products mentioned, and effective dates, filed with the American Iron and Steel Institute, New York, last week include:

Effective June 1

Hot-rolled carbon circular discs (gin and linter saw steel), 11.75c, Pittsburgh.

Effective June 4

Tinned twin heddle wire, 24.50c, Worcester, Mass.

Effective June 10

High carbon basic wire (equivalent to M.B.), 3.80c, Pittsburgh.

Effective June 11

Liquor bright iron elevator rope wire, 4.95c, Pacific coast ports.
Cast steel rope wire, 4.75c, Pacific coast ports.
Extra strong cast steel rope wire, 4.75c Pacific coast ports.
Plow steel rope wire, 5.25c, Pacific coast ports.
Improved plow still rope wire, 5.75c, Pacific coast ports.

New Officers Nominated For Society for Metals

B. F. Shepherd, manager, rock drill division, Ingersoll-Rand Co., Phillipsburg, N. J., was nominated for president of the American Society for Metals at a meeting of the society's nominating committee held in New York, May 24. Mr. Shepherd is at present vice president of the organization and has long been active in its affairs.

For vice president, R. S. Archer, chief metallurgist, Republic Steel Corp., Chicago, was nominated. He is now a trustee. W. H. Eisenman, 7016 Euclid avenue, Cleveland, was renominated for secretary.

Nominees for the office of trustee for two years are: Walter Mathesius, assistant general superintendent, Illinois Steel Co., Chicago; and G. B. Waterhouse, professor of metallurgy, Massachusetts Institute of Technology, Cambridge, Mass.

Unless additional nominations are received from the membership of the society prior to July 15, the nominees will be declared elected. In event of additional nominations, election will be conducted by mail ballot. The new officers will assume their posts at the close of the annual meeting to be held in New York during the week of Oct. 1.

Equipment

Chicago—The threatened steel strike is having an adverse effect on some equipment markets here. Machine tool purchases by several steel plants were under consideration recently but now have been shelved, temporarily at least, while the same uncertainty partly is blamed for deferred action on proposed improvement programs of a major nature. Activity in small tools is holding fairly well. Export business continues substantially heavier than a year ago in

PERFORATED METAL
FOR EVERY REQUIREMENT
including Architectural Grilles, Safety Guards and Screens of every sort in Steel, Brass, Bronze, Copper, Zinc, Tin Plate, Monel, Lead, Stainless Iron, etc.
Write for complete information
THE HARRINGTON & KING PERFORATING CO.
5634 FILLMORE STREET—CHICAGO, ILL.
New York Office, 114 Liberty Street

many types of machinery. Railroad purchases generally are of a miscellaneous character.

Boston—Larger machinery building shops have fair backlogs and a large volume of equipment has been quoted on. About $150,000 worth of wire mill equipment has been placed recently in the Worcester, Mass., district. Navy inquiry continues active, including many items for New England delivery.

New York—Several of the larger dealers in machinery and equipment finished fairly strong this month bringing the total volume up to that of April. A large volume is out for figures, but the actual placing of considerable such business at the rate of 10 per cent is considered satisfactory.

Construction and Enterprise

New England

BRISTOL, CONN.—E. Ingraham Co., manufacturer of clocks and clock movements, has let a contract to the Torrington Building Co., Torrington, Conn., for two additions, one of six stories, 50 x 120 feet, for general manufacturing, and one of five stories, 78 x 98 feet, for warehouse use. Cost is estimated at more than $100,000.

TAUNTON, MASS.—Hicks, Hirst & Co. Inc. has been formed by William Hirst, 272 Centre street, Bridgewater, Mass., to operate jobbing foundry in gray iron.

PROVIDENCE, R. I.—Franklin Process Co., manufacturer of dyeing machinery, has awarded 100 tons of shapes and bars to the Providence Iron & Steel Co. for plant addition. A. F. Smiley Construction Co., Pawtucket, R. I., general contractor.

New York

BROOKLYN, N. Y.—Signal supply officer, army base, will receive bids June 15, proposal 119, for 240 generators, type GN-37.

BUFFALO—Nottingham Steel Co., 401 Literary road, Cleveland, has leased space and will operate a warehouse at 601 Ohio street, Buffalo.

BUFFALO—Auto Safe Corp. has been formed by Clarence W. Bauer, 425 Glenwood avenue, and associates, to manufacture locking devices for automobiles and similar products.

LACKAWANNA, N. Y.—Revised estimates place the loss in the fire which swept the main building of the Spring Perch Co. at $75,000. Originally the loss was placed at $250,000. (Noted May 28.)

NEW YORK—Sundstedt Aircraft Corp. has been organized by Hugo Sundstedt, 2 West Forty-fifth street, with $350,000 capital, to manufacture airplanes and airplane parts.

NEW YORK — Ladenheim Steel Equipment Corp. has been formed to manufacture steel and metal equipment, by Maurice Lefkort, 570 Seventh avenue, New York.

NEW YORK—National Boiler Equipment Co. has been incorporated with $10,000 capital, by Nathan Frankel, 50 East Forty-second street, and associates.

NEW YORK—Riddell Stoker Corp. has been formed by Elliott H. Green, 161 West Seventy-fifth street, to manufacture stokers.

NEW YORK—Titanium Pigment Co., 111 Broadway, A. S. Moses, general manager, has let contract to Wigton-Abbott Co., 143 Liberty street, for a plant at Sayreville, N. J., including powerhouse, machine shop and other departments, to cost $2,500.000.

NEW YORK—International Harvester Co., 122 East Forty-second street, New York, has leased a foundry at 537 West Twenty-sixth street, owned by John Williams Inc., and will convert it into a factory branch.

NEW YORK—New York Wire Cloth Co., 500 Fifth avenue, plans a 1-story addition 110 x 180 feet at its plant on Market street, York, Pa. R. A. Stair, Guardian Trust building, York, Pa., is architect. (Noted May 14).

PULASKI, N. Y.—Harnden Machine Co. Inc. has been formed by John L. Harnden and Roy Sanderson, both of Pulaski, N. Y., to manufacture mechanical devices. (Noted May 21).

Pennsylvania

FLEETWOOD, PA.—Borough of Fleetwood has had $110,000 loan approved for municipal electric plant.

FRANKLIN, PA.—Franklin Creek Refining Co., Franklin, Pa., has announced plans for construction of two distillation units to cost about $150,000. C. H. Alsberg is manager.

IRVINE, PA. — National Forge & Ordnance Co., manufacturer of forgings, is taking preliminary figures for the erection of a building.

JEANNETTE, PA.—Victor Brewing Co. has plans in progress for a bottling plant to cost $20,000. Will take bids early in June. Robert J. Brocker, Coulter building, Greensburg Pa., is architect.

KENNETT SQUARE, PA.—Borough of Kennett Square, W. E. Voorhees, secretary of council, will receive bids May 31 for construction of two pumping stations and one-story chlorination building. Albright & Friel, 246 South Fifteenth street, engineers.

MIDDLETOWN, PA.—War department, office of constructing quartermaster, Middletown air depot, is planning to build an air corps shop and hangars.

NORRISTOWN, PA.—West Norristown township commissioners, Donald S. Harding, secretary, are planning to construct a sewage disposal plant.

PHILADELPHIA, PA.—Air Reduction Sales Co., Allegheny and Germantown avenues, has awarded a contract for a 1-story addition and changes in its present plant to William Steele & Sons Co., Market Street National Bank building. Cost is estimated at more than $25,000. (Noted May 28).

New Jersey

NEWARK, N. J.—Atlantic Sheet Metal Works Inc., F. J. Blandis president, which was formed recently, has taken quarters at 253 Jefferson street and will manufacture metal specialties.

NEWARK, N. J.—Scientific Model Airplane Co., 277 Halsey street, manufacturer of aircraft supplies and equipment, has leased space at 218 Market street for a new plant, occupying about 10,000 square feet.

PERTH AMBOY, N. J.—Raritan Metal Co. has been formed by David T. Wilentz, 265 Madison avenue, and associates, with $125,000 capital, to manufacture metal products.

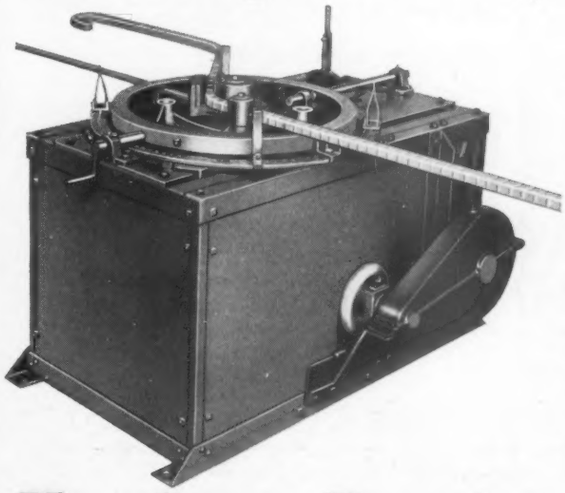
Ohio

CINCINNATI—David J. Joseph Co., Cincinnati, has bought the equipment of the Union Reduction Co., Cincinnati, expected to yield nearly 2000 tons of miscellaneous scrap.

CINCINNATI—Reliable Pattern & Castings Co., 2822 Spring Grove avenue, plans to build a 1-story addition 62 x 120

Kardong Four-way Bender

Model D-2



The Model D-2 Kardong Four-way Bender was designed because of the popular demand for this type of Bender.
In the bending of large bars they do not have to be turned over to make the reverse second bends and in the 180 degree hook bars, after making the first hook the bending member is in position to make second hook by just switching resistance roller to opposite side.
The resistance roller plates are adjustable. The same construction is carried thru on this machine as in all of our benders and is guaranteed to give absolute satisfaction. Ask for catalogue of our complete line of reinforcing steel bar benders.

Kardong Brothers, Inc.
Minneapolis, Minn.

feet, to cost more than $35,000, including equipment. Joseph G. Steinkamp & Brother, Mercantile Library building are architects.

TOLEDO, O.—Electric Auto-Lite Co., C. O. Miniger, president, has purchased a plant in Syracuse, N. Y., which will enable it to satisfy its principal customers from two sources of supply.

Michigan

CADILLAC, MICH. — Pneu-Hydro Road Machinery Co.'s plant recently was damaged by fire to the extent of $25,000. The building will be reconstructed.

DEARBORN, MICH.—Simplex Automatic Press Feeder Corp., 5202 Middlesex avenue, has been organized to manufacture automatic press feeders, by Austin J. Worden, 4754 Williamson avenue.

DETROIT—Tessmer Machine & Tool Co. has been formed to conduct a tool shop by F. P. Tessmer, 3337 St. Joseph street.

DETROIT—Nilson Tool & Mfg. Co. Inc., 4933 Elmhurst avenue, has been incorporated to manufacture tools, dies, metal fixtures, etc., by Harold G. Nilson, 12697 Meyers road.

DETROIT—Erie Bronze & Aluminum Foundry Inc., 1979 McComb street, has been formed to manufacture brass, iron and aluminum, by John A. Frederickson, 5947 Fifteenth street.

DETROIT—Department of public works, city hall, is completing specifications for furnishing and installing a pump and boiler at the Connors Creek pumping station, to cost $60,000.

DETROIT—Giffels & Vallet Inc., 606 Marquette building, are preparing plans for a conveyor system to be located in the steel mill of the Ford Motor Co. at the River Rouge plant.

GRAND RAPIDS, MICH.—Pearson, Maghielse & Buttrick Inc., 1600 Monroe avenue, has been incorporated to deal in metal products, by Leo R. Buttrick, 509 Kenwood street, northeast.

Indiana

LAPORTE, IND.—Traction foundry plant, idle for several years, will be reopened for business about June 15. A company is now being formed to operate the foundry. S. E. Doster, Benton Harbor, Mich., owner of the building, operated the foundry at one time in connection with the Superior Steel & Malleable Iron Co., Benton Harbor, Mich., of which he is president.

SOUTH BEND, IND.—Sibley Machine Co. will build a 1-story foundry addition, 100 x 145 feet, to cost over $50,000. Frank D. Chase Inc., 807 North Michigan avenue, Chicago, is architect and engineer. General contract to Ralph Sollitt & Sons, South Bend, Ind.

Illinois

CHICAGO—Rotary Electric Machine Mfg. Co., 4121 West Lake street, recently formed, is equipping about 6000 square feet of floor space for its manufacturing operations.

CHICAGO—Sinko Tool & Mfg. Co., 351 North Crawford avenue, manufacturer of tools and specialties, will build a top addition, 1-story, 95 x 125 feet, to cost about $40,000, including equipment. General contract to A. W. Jensen, 192 North Clark street.

CHICAGO—Invincible Dust Collecting Systems Inc., 2422 Homer street, has been incorporated to manufacture blow pipes, dust collectors and dust collecting systems, by Joseph A. Fernoch, John G. Erikson, and Andrew H. Anderson. Correspondent: George C. Rabens, suite 400, 180 West Washington street.

CHICAGO—Western Printing Machinery Co., 430 South Green street, has been incorporated to manufacture machines, tools, and machine specialties of all kinds, by C. G. Olson, Axe C. Broman, and J. E. Gilbert. Correspondent: Theodore W. Schroeder, care of Werner W. Schroeder, 1 LaSalle street building, suite 825.

District of Columbia

WASHINGTON—R. C. Kidd, chief, procurement division, will receive bids June 8, proposal G-332, on steel dressers, desks and chairs.

WASHINGTON — District commissioners will receive bids June 8 for furnishing electric motor-driven centrifugal pumping unit for water division, with a daily capacity of 5,000,000 gallons.

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids June 8, schedule 2495, on two motor-driven, six spindle, automatic screw machines, delivery at Washington.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids June 12, schedule 2606, on portable electric pumps, delivery Sewall's Point, Va.; schedule 2579, on pumps (emergency feed, fire and bilge) and spare parts and tools, delivery various east and west coast points.

Florida

ST. AUGUSTINE, FLA.—City plans building new electric plant. Will receive bids for electrical engineering as to valuation of local electric plant. E. N. Calhoun, city attorney; Engene Marten, city manager.

FORT PIERCE, FLA.—Bond contract has been completed for release of PWA funds for building $36,000 power plant.

Maryland

WILLIAMSPORT, MD.—City is having plans prepared for sewer system and sewage treatment plant to cost $88,000. Whitman, Requardt & Smith, southwest corner Charles and Biddle streets, Baltimore, engineers.

Mississippi

BILOXI, MISS.—United States Veterans hospital is planning to construct a finishing shops building and an addition to storehouse.

TYLERTOWN, MISS. — Simmons Bros. will receive bids Sept. 1 for construction of machine shop for the manufacture of plow shapes and farm tools.

North Carolina

HUDSON, N. C.—Caldwell Cotton Mills Co., B. B. Hayes, is planning to install spinning and carding equipment and auxiliary machinery.

LINCOLNTON, N. C.—Lincolnton Brick & Tile Co., M. S. Beam, is planning to establish a plant for manufacture of cement brick. Equipment will be installed.

WOODLAND, N. C.—Woodland Ginning & Milling Co. has been incorporated with capital of $50,000 by H. P. Dunning and J. H. Lassiter.

Tennessee

CHATTANOOGA, TENN.—Charles A. Brelsford, Brelsford Addition Chattanooga, and Dewey Dugas Hester, Valley Head, Ala., plan organizing company for manufacture of patent hot water system device.

KNOXVILLE, TENN. — Tennessee

OF VITAL IMPORTANCE TO YOU!

—The Administration's Monetary Program— And Its Influence on Business!

An interesting discussion, in handy printed form (fits your pocket) of this important subject is just off the press. The treatment is simple and straightforward. It tells you what has been done and what remains to be done.

The market action of commodities and securities since last April indicates the great advantage of a clear understanding of this subject. A copy of this booklet will be sent free on request.

BROOKMIRE, Inc.

Investment Counselors and Administrative Economists
Established 1904

551 Fifth Avenue New York, N. Y.

BROOKMIRE, Inc.
551 Fifth Avenue, New York, N. Y.
Send me your booklet, "The Administration's Monetary Program."

NAME .....

ADDRESS .....

S-79

WHERE-TO-BUY

A classified list of advertisers according to products. ¶Index to advertisements gives page number of any advertiser.

ABRASIVES (Polishing)
Carborundum Co., The, Niagara Falls, N. Y.
Norton Co., Worcester, Mass.

ACCUMULATORS
Morgan Engineering Co., The, Alliance, O.

ACETYLENE
Linde Air Products Co., 30 E. 42nd St., New York City.

ACID-PROOF COATING
Ceilcote, The Co., Rockefeller Bldg., Cleveland, O.

ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

AIR COMPRESSORS—See COMPRESSORS (Air)

AIR CONDITIONING EQUIPMENT
Sturtevant, B. F., Co. Hyde Park, Boston, Mass.

AIR PREHEATERS
Sturtevant, B. F., Co., Hyde Park, Boston, Mass.

ALLOYS—See FERROALLOYS

ANGLES, CHANNELS—See BEAMS, CHANNELS, ANGLES

ANGLE IRON BENDERS
Excelsior Tool & Machine Co., Ridge and Jefferson Aves., East St. Louis, Ill.

ANODES (All Types)
Udylite Process Co., 3953 Bellevue Ave., Detroit, Mich.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago. Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Republic Steel Corp., Youngstown, O.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.

BABBITT METAL
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

BANDS—See HOOPS AND BANDS

BANDS (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Republic Steel Corp., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., Frick Bldg., Pittsburgh, Pa.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
McClintic-Marshall Corp., Bethlehem, Pa.

BARRELS (Plating)
Udylite Process Co., 3953 Bellevue Ave., Detroit, Mich.

BARS (Alloy)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Republic Steel Corp., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Timken Steel & Tube Co., Canton, O.

BARS (Concrete Reinforcing)
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle, St., Chicago, Ill.
Inland Steel Co., 38 S. Dearborn St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Republic Steel Corp., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.
Youngstown Sheet & Tube Co., Youngstown, O.

BARS (Iron)—See IRON (Bar)

BARS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Republic Steel Corp., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.
Timken Roller Bearing Co., The, Canton, O.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

BEAMS, CHANNELS, ANGLES, ETC.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

BEARINGS (Ball)
Bantam Ball Bearing Co., The South Bend, Ind.
Fafnir Bearing Co., New Britain, Conn.
New Departure Mfg. Co., Bristol, Conn.

BEARINGS (Bronze)
Shenango-Penn Mold Co., Dover, O.

BEARINGS (Journal)
Bantam Ball Bearing Co., The, South Bend, Ind.
Fafnir Bearing Co., New Britain, Conn.
Hyatt, Roller Bearing Co., P. O. Box 476, Newark, N. J.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Roller)
Bantam Ball Bearing Co., The, South Bend, Ind.
Fafnir Bearing Co., New Britain, Conn.
Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Roll Neck)
Bantam Ball Bearing Co., South Bend, Ind.
Fafnir Bearing Co., New Britain, Conn.
Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.
Ryerson, Jos. T. & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Timken Roller Bearing Co., Canton, O.

BEARINGS (Thrust)
Bantam Ball Bearing Co., The, South Bend, Ind.
Fafnir Bearing Co., New Britain, Conn.
Timken Roller Bearing Co., The, Canton, O.

BENDING AND STRAIGHTENING MACHINES
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Morgan Engineering Co., The, Alliance, O.
Thomas Spacing Machine Co., Pittsburgh, Pa.

BENZOL AND TOLUOL RECOVERY PLANTS
Koppers Construction Co., 1438 Koppers Bldg., Pittsburgh.
Youngstown Sheet & Tube Co., Youngstown, O.

BILLET CHIPPERS—SEE CHIPPERS (Billet)

BILLETS (Alloy and Carbon Steel)
Alan Wood Steel Co., Conshohocken. Pa.
Andrews Steel Co., Newport, Ky.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. La Salle St., Chicago, Ill.
Republic Steel Corp., Youngstown, O.
Timken Steel & Tube Co., Canton, O.
Washburn Wire Co., Phillipsdale, R. I.

BILLETS (Forging)
Alan Wood Steel Co., Conshohocken. Pa.
Andrews Steel Co., Newport, Ky.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. La Salle St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Republic Steel Corp., Youngstown, O.
Standard Steel Works, Co., Burnham, Pa.
Timken Steel & Tube Co., Canton, O.

BILLETS AND BLOOMS
Alan Wood Steel Co., Conshohocken. Pa.
Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. La Salle St., Chicago, Ill.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Republic Steel Corp., Youngstown, O.
Standard Steel Works Co., Burnham, Pa.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.
Timken Steel & Tube Co., Canton, O.
Youngstown Sheet & Tube Co., Youngstown, O.

BLAST FURNACE SPECIALTIES
Bailey, Wm. M., Co., 702 Magee Bldg., Pittsburgh, Pa.

BLAST FURNACES—See FURNACES (Blast)

BLOCKS (Chain)
Yale & Towne Mfg. Co., 4530 Tacony St., Philadelphia, Pa.

BLOWERS
Coppus Engineering Co., 359 Park Ave., Worcester, Mass.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., Phillipsburg, N. J.
Strong, Carlisle & Hammond Co., The, 1400 W. 3rd St., Cleveland, O.
Sturtevant, B. F., & Co., Hyde Park, Boston, Mass.

BOILER HEADS
Bethlehem Steel Co., Bethlehem, Pa.

BOILER TUBES—See TUBES (Boiler)

BOILERS
Murray Iron Works Co., Burlington, Iowa.

BOLT AND NUT MACHINERY
Landis Machine Co., Waynesboro, Pa.

BOLTS
Bethlehem Steel Co., Bethlehem, Pa.
Illinois Steel Co., 208 S. La Salle St., Chicago, Ill.
Jones & Laughlin Steel Co., Jones & Laughlin Bldg., Pittsburgh, Pa.
Oliver Iron & Steel Corp., S. 10th & Muriel Sts., Pittsburgh, Pa.
Republic Steel Corp., Upson Nut Div. 1912 Scranton Rd., Cleveland, O.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Inc. 16th and Rockwell Sts., Chicago, Ill.

BOXES (Annealing)
United Engineering & Fdry. Co., First National Bank Bldg., Pittsburgh, Pa.

BOXES (Case Hardening)
Strong, Carlisle & Hammond Co., The, 1400 W. 3rd St., Cleveland, O.

BOXES (Open Hearth Charging)
Morgan Engineering Co., The, Alliance, O.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

Valley Authority, Knoxville, will receive bids June 18 at the office of C. H. Garity, director of purchases, Old Postoffice building, Knoxville, Tenn., for furnishing, fabricating, galvanizing and delivering to scheduled delivery points, 699 steel transmission towers and accessories.

MURFREESBORO, TENN.—Clarks Dairy Products Co., affiliated with Wilson & Co., Chicago, is planning to install machinery for manufacture of cheese. Plans improvements totaling $40,000.

West Virginia

CHARLESTON, W. VA.—Kanawha Valley Power Co., Charleston, W. Va., will start construction soon on two hydroelectric developments on Kanawha river. Three generating units of 6000 kva capacity each will be installed at each dam. Estimated cost is $4,000,000.

CHARLESTON, W. VA.—Kanawha By-Products Coal Co. has made application to United States engineer, Huntington, W. Va., for permission to build coal tipple and ice breaker on right bank of Kanawha river near the mouth of Mile Branch, in Marmet pool.

Virginia

FREDERICKSBURG, VA. — Belmont Iron Works, Philadelphia, has contract for 200 tons of shapes for plant addition for the Sylvania Industrial Corp. manufacturer of transparent cellulose paper.

MARTINSVILLE, VA.—City, B. S. Parrish, superintendent and engineer, is planning waterworks improvements to cost $75,000.

NEWPORT NEWS, VA.—City, A. M. Hamilton, city clerk, is receiving bids for garbage incinerator plant of 120 tons capacity, and all auxiliary equipment.

PULASKI, VA.—Anthracite Coal & Briquetting Co., D. Gray Langhorne, wants prices and data on boilers, 150 to 200 horsepower, carrying 150 pound steam pressure, and 20,000-pound capacity steam hoist.

RICHMOND, VA.—Bids will be received June 18 at 303 State Office building, Richmond, for installation of cotton mill plant in Virginia state penitentiary. Charles A. Osborne is director, division of purchase and printing.

Missouri

KANSAS CITY, MO.—Sheffield Steel Corp., Kansas City, Mo., subsidiary of American Rolling Mill Co., Middletown, O., is reported to be concluding negotiations for leasing eastern section of plant of Scullin Steel Co., including the rolling mill and 6 of the 11 open-hearth furnaces.

ST. LOUIS—St. Louis & San Francisco railway, J. M. Kurn, president, is planning an addition to its Memphis, Tenn., shop to cost $25,000, to be used as a forge shop for the car wheel division.

ST. LOUIS—J. D. W. Lambert and Harry Hall Knight, 320 North Union street, have acquired the Monocoupe Corp., manufacturer of cabin planes, and will change the name to Lambert Aircraft Corp. Manufacturing capacity will be enlarged.

ST. LOUIS—Three Point Corp. has been incorporated with $10,000 capital to manufacture steel folding stools by C. W. Barth, 402 National Bank of Commerce building, president. Manufacturing at first will be by contract.

ST. LOUIS—L. R. Flori Co., 2626 North Broadway, has leased a one-story factory building at 601-17 Red Bud avenue for the manufacture of steel, iron and metal products. Extensive improvements to the plant are planned, including installation of machinery.

Arkansas

KENSETT, ARK.—City, T. J. Pryor, has had loan of $50,000 approved for waterworks and sewerage system.

Oklahoma

FAIRFAX, OKLA.—Hinderliter Tool Co., Tulsa, Okla., has completed its machine shop and branch store building, the shop unit, 30 x 70 feet, consisting of machine shop, forge shop and welding room. A. Ditson is manager.

HENRYETTA, OKLA.—Delso Coal Co. has been incorporated with $5000 capital by Dan Delso, president.

OKLAHOMA CITY, OKLA.—Capitol Iron & Metal Co. has been incorporated with $10,000 capital by Ralph Finkelstein, 1929 Northwest Nineteenth street.

OKLAHOMA CITY, OKLA.—Russell & Morgan Welding & Boiler Works, 1130 Southeast Twenty-ninth street, has been organized by J. C. Russell and Claude Morgan.

SHAWNEE, OKLA.—Shawnee Oil Field Supply Co. has been incorporated with $50,000 capital to handle pipe and oil field material, by W. M. Gallagher.

TULSA, OKLA.—Air Way Pump Co. has been incorporated with $10,000 capital to engage in the manufacture of pumps and other devices. A. G. W. Biddle, Skiatook, Okla., is president.

Texas

AMARILLO, TEX.—City has PWA loan and grant of $186,000 for waterworks, including construction of 5,000,000-gallon concrete storage reservoir, supply mains and extension to distribution system.

BRIDGEPORT, TEX. — City, Roy Poore, secretary, will receive bids June 14 for new water and sewer system to cost $145,000. No equipment has been purchased. Freese & Nichols, Capps building, Fort Worth, Tex., are engineers.

CONROE, TEX.—San Jacinto Oil & Refining Co., postoffice box 636, plans to build an oil refinery near Livingston, Tex., to replace the plant recently destroyed by fire at Conroe, Tex. Probable plans call for a skimming unit with capacity of 1000 barrels daily. Sherman Nelson is president and general manager.

CORPUS CHRISTI, TEX.—City, W. Shaffer, mayor, has applied for loan for sewage treatment plant and sanitary sewer line extensions to cost $435,000. Harrington & Cortelyou, 1004 Baltimore avenue, Kansas City, Mo., engineers.

DALLAS, TEX. — American Cotton Machine Co. has been incorporated with $5000 capital by C. S. McKinley, 3822 Lemmon avenue.

DALLAS, TEX.—Creamery Package Mfg. Co., Chicago, has leased space at 801 Ross avenue for a branch plant, in charge of J. R. Kramer, branch manager.

DALLAS, TEX.—Golden Aircrafts Corp. has been incorporated with $1000 capital to manufacture airplanes, by J. P. Hanks, Praetorian building.

DALLAS, TEX.—Pitometer Co., 5311 Kenmore avenue, Chicago, has submitted report to water department for improvement program for water system, advising immediate expenditure of $124,000, and an improvement program covering 25 years at cost of $2,852,840.

FORT WORTH, TEX.—Ora Mfg. Co., 511 Main street, has been organized to manufacture cafeteria equipment.

FORT WORTH, TEX.—C. O. Hutchinson Pipe & Supply Co. has opened a pipe yard and plant at 900 North Main street. C. O. Hutchinson is owner and manager.

GLADEWATER, TEX. — Spencer-Harris Machine & Tool Co. has been incorporated with $6000 capital, by C. E. Dawson, Lee Spencer and L. F. Harris.

HOUSTON, TEX.—Charles F. McGinty, 305 Bremond avenue, manager of newly-organized Intracoastal Canal Transportation Co., to operate between Chicago and Houston Tex., wants prices and data on construction of river tug boats.

ROSENBERG, TEX.—Brazos Valley Veneer Mill Inc. has been chartered by I. N. Mills and F. L. Tiller, to operate a woodworking plant.

Wisconsin

BARTON, WIS.—Wesbar Stamping Corp. has been incorporated with capital stock of $25,000 to manufacture dies, tools, etc., by W. M. Urkhart, C. I. Nelson and Oscar Schlegel.

BELOIT, WIS. — Warner Electric Brake Mfg. Co. has been incorporated to take over the Warner Electric Brake Corp., manufacturer of electrical braking systems for heavy duty trailers. The new concern will also manufacture a line of such brakes for passenger cars and motor trucks. A. P. Warner is vice president and general manager.

BLOOMER, WIS.—Bloomer Brewing Co., A. L. Lipschultz, president, has awarded contract for a brewery addition, including fermenting and storage tanks, to cost $25,000.

COLUMBUS, WIS.—City council has authorized construction of a municipal power plant to cost $120,000.

MADISON, WIS.—Work will be started shortly on a $900,000 sewage disposal plant at Nine Springs, for which federal aid has been allotted, Greeley & Hanson, 6 North Michigan avenue, Chicago, are consulting engineers.

MILWAUKEE — Galland - Henning Mfg. Co., 2753 South Thirty-first street, has taken a contract to equip a 5-drum addition to the Ladish-Stoppenbach elevator and malting plant at Jefferson Junction, Wis.

MILWAUKEE—Golden Guernsey Co-Operative is building an $80,000 addition at 2206 North Thirtieth street. Equipment, which includes a complete laboratory, will cost $30,000. Gavin McKerrow is president.

TWO RIVERS, WIS.—Bids will be closed June 7 on construction and equipment of a municipal filtration plant, to cost nearly $200,000, including a 500,-

000-gallon elevated water tank. E. J. Donnelley is city manager.

WEST ALLIS, WIS.—Universal Power Shovel Corp. has been incorporated with capital stock of $50,000 to manufacture power shovels and road building machinery, by E. M. McDonald, C. H. Galin and C. Rodermund.

WAUSAU, WIS.—Minnesota Mining & Mfg. Co., Minneapolis, will enlarge its quarry and abrasives plant here at cost of about $90,000. The new crushing and screening plant will be built first. L. A. Hatch is branch manager.

Minnesota

AUSTIN, MINN.—Board of water, electric, gas and power commissioners, C. F. Cook, president, will receive bids until June 11 for improvements to municipal power plant, including installation of a turbo-generator and other equipment. Ralph D. Thomas, 1200 Second avenue, south, Minneapolis, is engineer.

CLOQUET, MINN.—Berst-Forster-Dixfield Co., manufacturer of matches and woodenware, will build another factory addition to cost $150,000. Considerable new machinery and equipment will be installed.

FAIRMONT, MINN.—City council, F. G. Christenson, city clerk, will receive bids until June 6 for sewage treatment plant, including screen house, two filter beds, secondary clarifier, pump house, air skimming equipment, etc., to cost $65,000. Currie Engineering Co., Webster City, Iowa, is engineer.

FARIBAULT, MINN. — Faribault Canning Co. is having plans prepared for extensive alterations to its canning plant, including installation of new special machinery. Ralph Richardson, 419 New York building, St. Paul, is engineer.

MINNEAPOLIS—Warner Mfg. Co., 801 Sixteenth avenue, southeast, H. H. Warner, secretary, manufacturer of paperhangers' tools and other tools, will rebuild factory recently damaged by fire.

MINNEAPOLIS—Interior Malt & Grain Co., L. E. Voell, secretary, is having plans prepared for a two-story malting plant addition at Twenty-seventh avenue, southeast and Great Northern railway tracks. Additional machinery will be installed.

MINNEAPOLIS—C. W. Olson Mfg. Co., 1800 Quincy street, northeast, producer of ornamental iron, aluminum and bronze work, has gone into production of a newly-developed line of air conditioning equipment for homes, apartments and offices.

STAPLES, MINN.—City council, B. C. Barrett, city clerk, will receive bids until June 11 for motor-driven deep well turbine pump.

WABASHA, MINN.—City council, Marcus Satory, city clerk, will receive bids until June 7 for sewage treatment plant, outlet sewer and water main extensions. Ealy G. Briggs, 1520 Hythe street, St. Paul, is engineer.

North Dakota

LANGDON, N. DAK.—City council, M. J. Backes, is planning to purchase a deep well turbine pump.

Iowa

CORNING, IOWA—City council, Vincent J. Mack, city clerk, will receive bids until June 12 for municipal light and power plant, including diesel engine generating equipment, cooling pond, oil tanks, terminal tower, electrical distribution system, etc., to cost $160,000. Young & Stanley, Muscatine, Iowa, are engineers. (Noted April 16.)

DES MOINES, IOWA—Gisin System, Charles Gisin, president, has completed installation of manufacturing equipment at its plant at 621 Sixty-third street and is starting production of rotary electric plugs, roller window screens and collapsible clothes racks.

DUBUQUE, IOWA—Municipal dock commission, John Kerper, chairman, plans to build a coal and ore dock, including loading and unloading platforms, storage bins, hoppers, cranes and other dock equipment, to cost $150,000.

FORT DODGE, IOWA—Tobin Packing Co., Rochester, N. Y., Fred M. Tobin, president, is having plans prepared for a packing plant on North First street here to cost $300,000. Main plant will be three stories, 175 x 230 feet. Processing plant will be built later. H. P. Henschien, 59 East Van Buren street, Chicago, is architect.

OELWEIN, IOWA—Chicago Great Western railroad is overhauling 32 Texas-type locomotives which it purchased several years ago. A $15,000 Whiting hoist has been installed in the shops to lift the engines for repair work.

SUMNER, IOWA—City council, H. W. Bathke, city clerk, will receive bids until June 19 for municipal light and power plant, to cost $115,000, including diesel engine generating equipment, electrical distribution system, etc. H. L. Cory, 1033 Redick Tower, Omaha, Nebr., is engineer.

Nebraska

FAIRBURY, NEBR.—Fairbury Planing Mill has been incorporated with capital stock of $50,000 to manufacture sash and doors and do a general cabinet and millwork business, by Luther Bonham and E. K. Brown.

Colorado

DENVER—Slack-Horner Brass Mfg. Co. recently was damaged by fire to the extent of $3000.

DENVER—Chief engineer, bureau of reclamation, will receive bids June 7 for two portable 400-ampere arc welding motor generator sets and two oxy-acetylene welding and cutting outfits for the Boulder dam power plant.

Pacific Coast

SEATTLE—Pacific Coast Forge Co., 3800 Iowa avenue, is having plans made for a 1-story addition to its office and shop building.

Dominion of Canada

ROUYN, QUE.—Aldermac Mines was damaged by fire last week to the extent of $200,000, including compressor and hoist houses.

GOOD USED EQUIPMENT

For

DIE CASTING
FORGING INDUSTRY
MACHINE SHOPS
POWER PLANTS
ROLLING MILLS
STAMPING
and
ALLIED INDUSTRIES
STRUCTURAL, BOILER
and
TANK INDUSTRY

AIR COMPRESSOR—171 cu. ft. 9 x 8" INGERSOLL RAND Single Stage, Type ERi, 100 lb. pressure, arranged for short belt motor drive including a 30 HP, 220/3/60 AC motor. Complete with unloader, idler, lubricator, etc.
BENDING ROLL—25' 6" NILES-BEMENT-POND Plate. Pyramid Type. Arranged for MD. Top roll 24-7/8" dia. Bottom rolls 18" dia. Cap. 1" plate. Drop end housing.
CRANE—5-T. SHEPARD Overhead Elec. Trav., 52' 4" span, 230 v. DC. Also equipped for bucket & magnet operation. 350 feet of Double "A" Frame Runway.
DRILL—Radial. CINCINNATI-BICKFORD 5' with 13" column, rectangular base, table and 10 HP 440/3/60 motor.
FURNACE—500-lb. MOORE Rapid 'Lectromelt for electric steel melting, 3 phase with complete electrical equipment including Transformer, 2200 to 120 volt AC.
LATHE—26" x 16' BRIDGEFORD Quick Change Geared Head Engine with taper attachment and chuck.
MAGNET—45" ELECTRIC CONTROLLER MFG. CO., 230 V. DC.
PLANER—30" x 10' LIBERTY with two heads on rail, rapid traverse and 10 HP 440/3/60 motor.
PRESSES—No. 12 BLISS Straight Side, Double Crank, Double Geared, Single Action, 14" stroke. Bed area 52 x 84". Shaft dia. 12" at bearings; 13" at pins. Arranged for MD and motor adjustment. Wgt. 200,000 lbs.
No. 6-1/2 BLISS Straight Side, Double Crank with spring counterbalance. Belt Drive. 54" between housings. 8" stroke.
SHAPER—32" COLUMBIA High Duty. Quick Change Speedbox. Arranged for direct connected constant speed motor drive.
SHEAR—No. 10 BUFFALO for bars and shapes. Capacity up to 3-7/8" rounds and corresponding duty in shapes. Direct connected AC MD with motor.

In addition to the above, we have available a wide variety of good equipment in various types and sizes.

Manufacturing RITTERBUSH & COMPANY, INC. Equipment
30 CHURCH ST.
NEW YORK CITY

STATISTICS OF IRON AND STEEL INDUSTRY

From dept. of commerce except shipments by U. S. Steel Corp., foundry equipment by Foundry Equip. Mfrs. assoc., river traffic by U. S. engineers at Pitts., electric power by geological survey.

U. S. Steel Corp.

1932	Automobiles: Units Production —United States— Total*	Automobiles: Units Production —United States— Passenger cars	Shipments: To consumers only, inter-company shipments not included: Canada	Shipments: To consumers only, inter-company shipments not included: Total Tons	Fabricated Shapes‡: Net Tons Bookings Tonnage	Fabricated Shapes‡: Net Tons Shipments Tonnage	Fabricated Plates: Net Tons Bookings	Fabricated Plates: Oil Storage Tanks	Fabricated Plates: Miscellaneous	Foundry Equipment Order Index†
Year	1,370,678	1,134,372	60,816	3,974,062	948,000	942,400	161,810	38,976	109,085	
1933										
Jan.	130,044	108,321	3,358	285,138	73,679	50,965	11,128	1,501	8,830	68.4
Feb.	106,825	91,340	3,298	275,929	50,955	46,168	16,588	8,347	7,660	16.1
March	117,949	99,225	6,632	256,793	71,398	54,948	8,903	1,270	6,787	9.8
April	180,667	152,939	8,255	335,321	46,095	50,387	9,502	2,938	6,291	19.4
May	218,303	184,578	9,396	455,302	42,600	63,968	16,243	2,858	8,183	25.7
June	253,322	211,448	7,323	603,937	81,910	64,809	37,020	20,894	14,013	45.5
July	233,088	195,019	6,540	701,322	56,482	51,303	20,058	6,013	11,417	48.6
August	236,487	195,076	6,079	668,155	78,379	67,913	16,320	2,581	10,618	56.2
Sept.	196,082	160,891	5,808	575,161	57,642	64,362	16,025	1,033	13,602	34.9
Oct.	138,485	108,010	3,682	572,897	53,695	73,139	17,839	1,434	12,162	42.46
Nov.	63,904	42,818	2,291	430,358	60,896	56,023	14,466	3,734	9,466	36.62
Dec.	84,045	52,061	3,262	600,639	83,799	56,388	13,692	2,160	9,819	43.2
Year	1,959,945	1,602,332	65,924	5,805,235	757,530	700,373	199,031	55,025	119,569	.....
1934										
Jan.	161,086	116,032	6,904	331,777	74,358	46,774	15,897	3,754	10,512	37.2
Feb.	235,384	190,253	8,571	385,500	60,036	38,101	14,641	2,476	10,452	65.8
March	336,013	278,149	14,180	588,209	82,250	50,685	38,924	2,202	33,806	75.4
April	360,620	292,811	18,363	643,009	96,010	65,233	20,085	2,998	13,447	19.4
4 Mo.	1,093,103	877,245	48,018	1,948,495	312,654	200,793	89,547	11,430	68,217	....

*Difference of total and passenger cars equals number of trucks. †Average monthly shipments, 1922-23-24 taken as 100
‡Figures by American Institute of Steel Construction, from January, 1933, 75 to 85 per cent of industry reporting.

1932	Malleable Castings: Net Tons Output	Shipments	Orders booked	Steel Castings: Net Tons Total bookings	Total production	Mech. Stokers —Sales— Fire tube boilers	Water tube boilers	Steel Furniture: Dollars 000 omitted Business shipments	Shelving, shipments	Babbitt Metal: Pounds 000 omitted (a) Total production	(b) Sales
Year	171,479	178,316	169,027	155,837	175,831	920	367	8,102	2,166	16,990	12,412
1933											
Jan.	12,577	14,248	12,404	14,450	15,378	55	13	582	121	1,346	1,073
Feb.	13,575	14,068	11,077	13,179	13,802	38	23	464	104	1,117	917
March	9,756	10,967	12,380	13,178	14,896	69	17	482	137	1,134	941
April	17,871	16,666	17,856	15,942	13,492	28	34	404	133	1,544	1,270
May	24,628	23,077	24,671	22,612	20,751	54	44	511	166	2,110	1,785
June	31,118	29,268	31,997	34,965	29,455	147	50	636	165	2,327	1,877
July	30,865	29,155	28,458	31,878	31,718	110	67	522	156	2,484	1,941
August	31,811	30,195	28,323	31,502	33,834	157	61	693	178	2,753	2,059
Sept.	27,078	25,402	22,744	25,220	28,087	175	28	734	163	2,419	1,803
Oct.	24,381	20,422	19,933	26,135	27,826	147	31	825	146	2,090	1,554
Nov.	21,903	19,722	20,776	25,558	24,721	142	40	799	195	1,963	1,606
Dec.	21,870	22,300	26,305	25,612	23,718	109	13	1,040	202	1,459	1,043
Year	268,617	256,419	258,082	280,231	277,678	1,231	421	7,697	1,870	22,812	17,876
1934											
Jan.	30,417	26,642	32,501	26,296	27,644	100	23	996	214	2,256	1,838
Feb.	33,939	31,412	36,594	35,698	28,526	49	25	894	279	2,147	1,715
March	43,438	41,530	42,961	60,044	39,475	62	43	955	394	2,474	1,976
April	40,742	39,817	38,453	63,142	46,242	48	39	934	346	2,527	1,964
4 Mo.	148,536	139,401	150,509	185,182	141,903	259	130	3,780	1,235	9,405	7,494

(a) by 40 plants. (b) by 30 manufacturers who produce for sale, including 5 who also report consumption of own metal.

1932	Coke: Net Tons Production By-Product	Coke: Beehive	Electric Power: Millions Kilowatt Hours Production*	Steel Barrels: Units Production	Shipments	River Traffic: Net Tons Allegheny	Monongahela	Ohio	Steel Boilers: Total	Units Stationary	Marine
Year	21,166,913	772,500	83,153	4,920,482	4,928,420	67,117	284,954	418,990	3,652	3,580	72
1933											
Jan.	1,784,527	81,900	6,932	341,382	341,055	1,627	11,724	18,002	197	189	8
Feb.	1,638,817	84,100	6,285	311,111	312,919	1,656	17,904	23,614	176	162	14
March	1,666,035	93,300	6,674	427,562	425,682	425	19,546	32,917	195	186	9
April	1,656,183	47,000	6,462	452,086	454,794	3,025	35,795	37,191	236	228	8
May	1,921,257	47,300	6,996	531,304	531,921	4,400	39,890	46,038	328	307	21
June	2,241,432	50,100	6,231	643,982	640,596	815	58,179	56,484	511	496	15
July	2,797,316	68,400	7,479	623,056	621,042	3,900	68,453	62,096	498	491	7
August	2,923,418	70,600	7,686	537,801	527,811	3,234	67,389	69,531	511	441	70
Sept.	2,712,050	59,500	7,347	580,471	585,842	2,000	43,026	38,480	447	442	5
Oct.	2,581,834	45,000	7,478	873,536	863,277	4,240	39,026	49,047	395	377	18
Nov.	2,334,597	92,800	7,243	638,850	644,954	1,550	28,216	39,573	296	291	5
Dec.	2,454,947	89,500	7,447	610,440	610,365	4,130	38,693	31,038	328	310	18
Year	26,722,400	829,500	85,260	6,571,581	6,560,258	31,007	467,841	509,011	4,118	3,920	198
1934											
Jan.	2,475,785	96,600	7,631	708,086	706,209	590	27,158	54,109	249	239	10
Feb.	2,493,494	118,300	7,051	573,391	572,915	520	12,429	4,373	212	198	14
March	2,968,573	149,700	7,665	695,681	703,101	2,180	40,685	47,897	294	283	11
April	2,875,451	60,800	.....	657,185	658,216	5,100	51,995	72,974	380	361	19
4 Mo.	10,813,303	425,400	.....	2,634,421	2,640,579	8,390	132,267	179,353	1,135	1,081	54

*For public use.